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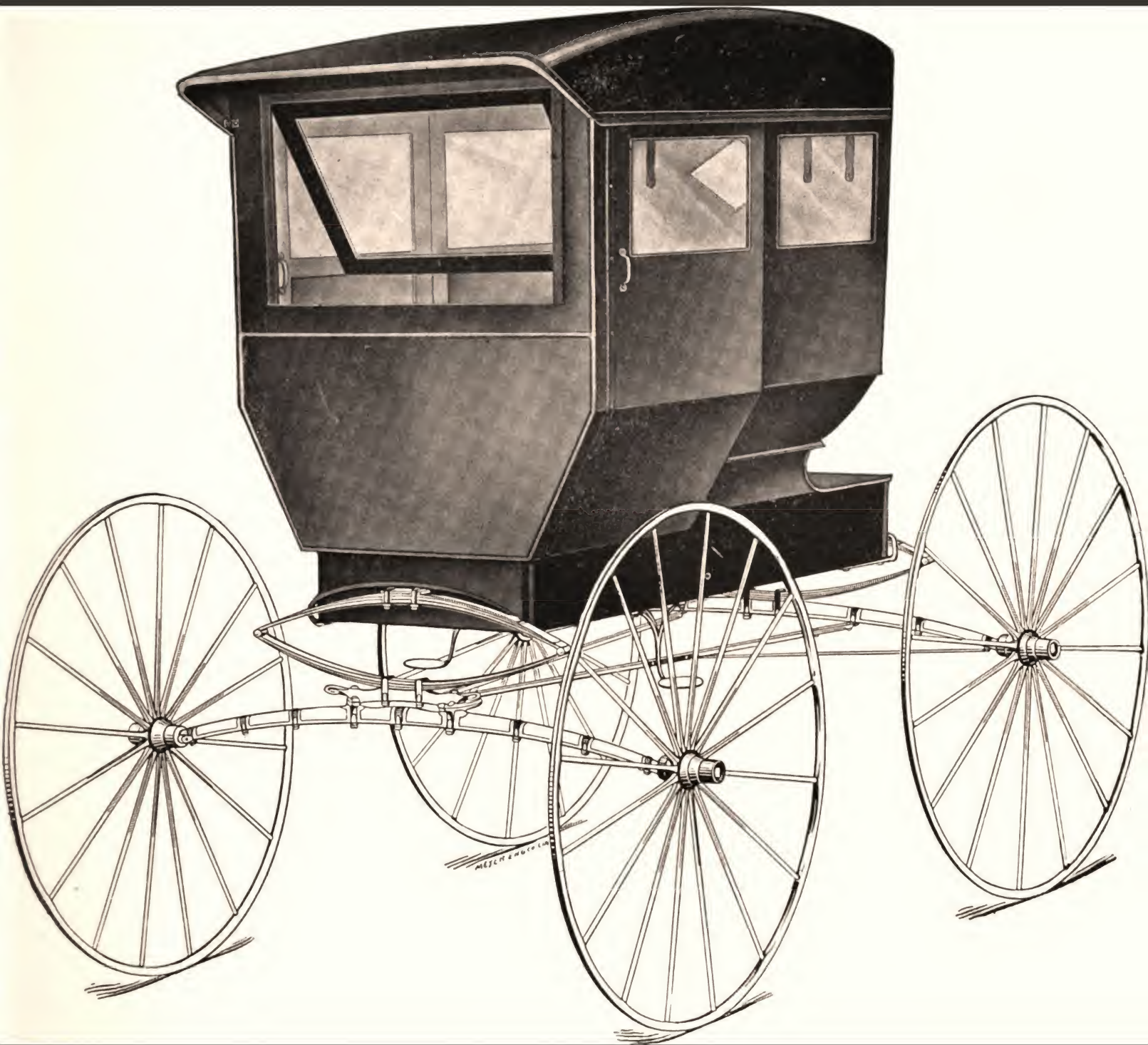
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# *The Hub*



TRADE NEWS PUBLISHING COMPANY

24-26 MURRAY ST., NEW YORK



# Hoopes Bro. & Darlington Inc.

West Chester, Penna., U. S. A.

SARVEN

STAR or KENNY

Sweet Concealed Band

WOOD HUB

WARNER

# WHEELS

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WAGONS and

TRUCKS

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Originators of

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Acknowledged the Standard for Fifty Years

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## CRANE & MACMAHON, (INCORPORATED)

8-10 Bridge St., NEW YORK CITY, U. S. A.

Sole Manufacturers and Exporters of the

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BRANDS OF

Carriage, Wagon and Automobile Wood Stock

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For Export Prices apply to the New York Office.

## Right here is your chance to sell another wagon

These horses are pulling twice as hard as they need, to haul this load.

Two of them could haul it instead of four if friction in the hubs were cut way down to almost nothing by the use of

Most of you wagon builders know this—you've seen it demonstrated time after time in the past fourteen years.

Now show it to the owner of these four horses.

Prove to *him* that the four can haul *two* wagons just as easily as as they now haul one.

Wake him up to the fact that he is losing a big chance to double the efficiency of his haulage service.

***He needs another wagon.***

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Prove to him that he can have the extra service of another wagon without the expense of extra horses.

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CANTON, OHIO

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*Timken Roller Bearings are used in a big majority of all motor cars.*

*Pleasure and Commercial Car Axles and Jackshafts with Timken Roller Bearings made only by the Timken-Detroit Axle Co., Detroit.*

201

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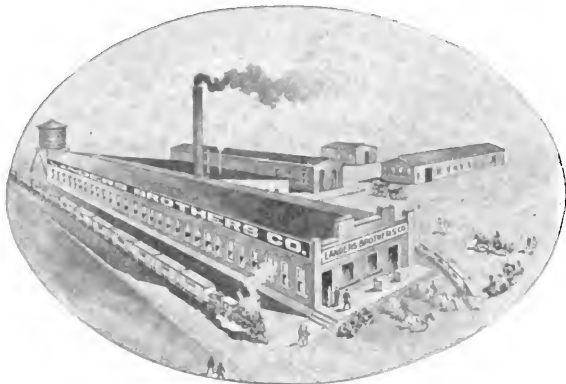
## THE NEW WAPAKONETA WHEEL COMPANY WAPAKONETA, OHIO



## Buckram, Webbing,

Made in Our Factory

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Top Material,

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Prompt Shipments

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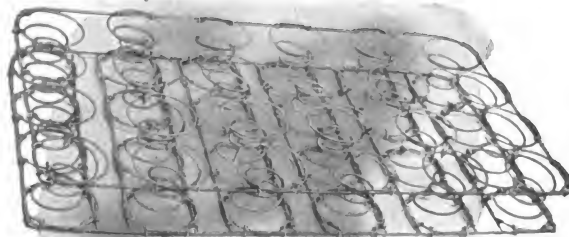
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THE SPRING OF QUALITY.



SPRING or SOFT EDGE CUSHION FRAME

For Buggies or Other Vehicles. Built of the Highest Grade of Steel Wire.



STRIP FOR WOOD OR BOX FRAME



## MAYO RADIATORS

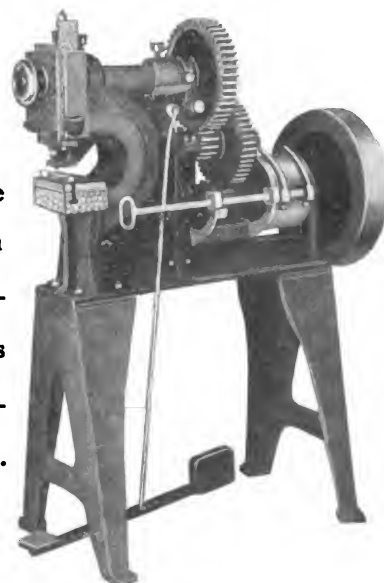
have done their part in making the splendid reputations of America's best known cars.

Can any maker afford to jeopardize his reputation and nullify his good work in other directions for the sake of a few dollars "saved" in the purchasing department?

**MAYO RADIATOR CO.**  
NEW HAVEN, CONN.

## BICKNELL'S No. 90-B Punch and Shear

Designed  
for close  
work such  
as punch-  
ing tires  
and simi-  
lar work.



Made with  
automatic  
stripper if  
desired.  
Also made  
in larger  
sizes.

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HANDY MACHINERY FOR CARRIAGE AND WAGON SHOPS  
MODERN GASOLINE MOTORS, ELECTRIC LIGHTING PLANTS

**Bicknell Mfg. & Supply Co.**  
JANESVILLE, WISCONSIN

# Victor Sectional Truck Tires

operated during the past winter without chains. Have you had chain troubles with your Tires? Why not investigate the Victor? Simple to renew. Simple to repair. Can be used single or dual. Perfect traction. More resilient than endless. . . . .

Write for quotation and guarantee.

**THE VICTOR RUBBER CO.**  
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Oil Tank Motor Truck equipped with  
Victor Sectional Truck Tires.

Weight with load, 16,000 lbs.

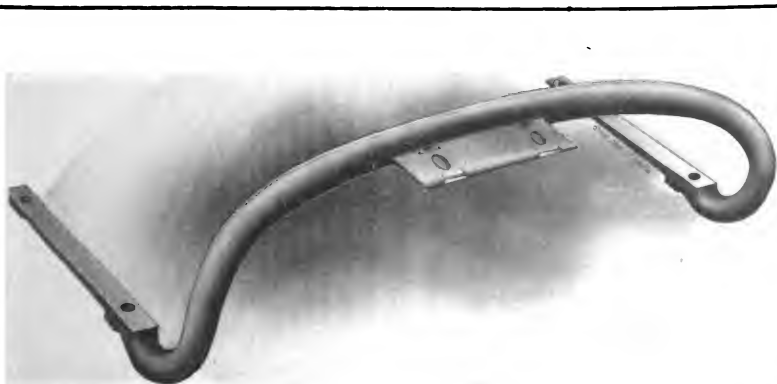
**Jones Wheels**  
BEST ON EARTH  
**KANTSAMORE**  
**Phineas Jones & Co.**  
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We have Automobile  
Gears for every purpose  
in stock upon which  
we can save you money.

**FROST GEAR & MACHINE COMPANY**  
JACKSON, MICHIGAN



Patented December 7, 1897

## Bailey Body Hanger

BUGGY and SURREY SIZE

QUICK SHIPMENTS

WRITE FOR PRICES

**The Keystone Forging Co.**  
Northumberland, Pa.

# LOOK FOR THIS



## Meritas Leather Cloth

Patent Leather and Imitation Rubber Finishes - made in  
Muslin, Drill & Duck for Carriage & Automobile Trimmings.

### AT YOUR JOBBERS

The "MERITAS" trade mark on the back guaran-  
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### Standard Oil Cloth Co.

320 Broadway

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REG. U.S. PAT. OFF.  
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**Business**

at  
**SMALL EXPENSE**

A few rolls of standard shades in stock put your store in shape to sell to the local customers for Fabrikoid.

We want to send inquirers to the local dealer having Fabrikoid for sale.

Thousands of yards are sold direct to housewives who cannot purchase this attractive and desirable fabric of the local dealer. You should have the profit and added custom of these buyers.

Ask your Jobber or send to Dept. 269  
for samples TO-DAY.

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— THAT DON'T CRACK —

That can't be distinguished from machine buffed hide.

That wears as well as expensive leather but costs much less.

Leather with these advantages is **Diefenthaler's** soft and pliable hides, and we guarantee that no oil will come out.

Made specially for carriage and automobile trimmings.

We will send sample hide for your approval without charge.

### JOHN V. DIEFENTHALER

Hamilton, Bruen and McWhorter Sts.  
**NEWARK, - - NEW JERSEY**

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of PETTINGELL PATENTS forms the largest, if not the entire equipment of most every automobile body plant in the United States. This surely denotes superiority of the Pettingell line. These machines are also extensively used to do first class work in getting out body stock and frame work.

WRITE FOR CATALOGUE



**NEW AUTOMATIC POWER HAMMER**

Designed and made especially for Aluminum or Metal Body Work; gives plenty of room to form or turn body panels, seats, wide backs, etc. Is designed and built to run at a high rate of speed, and the peculiar construction with springs and belts preserves the bearings, pins and screws from racking or breaking.



**IMPROVED METAL ROLLER FORMER.**

A solid, substantial machine, all metal, with cut gears. Will make any curve or various irregular curves on Mud Guards, Metal Panels, Seats, Etc.



**HAND MOULDING OR BEADING FORMER.**

Will form moulding or beading any size or shape, cuts all metals, will fold in wire around edge of metal and turn over flanges, etc. Intended for use in factories and shops where small machines are needed for much of the work that can be done quicker and easier than on large power machines, and also for many shops where they have not power or facilities or do not wish to put in the large, powerful and more expensive machines.



**POWER MOULDING OR BEADING FORMER**

A big improvement over any machines formerly used for forming, beading or moulding; cutting all metals; turning over flanges or folding in wired edge of metal, or any part of the work, and combines three machines in one. Adjustable every way and quickly changed for any work. Designed and built to handle all kinds of metal, aluminum, sheet steel, copper or tin.

**THE PETTINGELL MACHINE CO.**  
**AMESBURY, - - - - - MASSACHUSETTS**

Quality  
Is  
Economy

*TO TREAT CUSTOMERS AS  
PARTNERS WILL GIVE  
COMPETITORS YOUR DUST*

Every customer remembers it as  
an especial favor when you put  
Murphy Varnish on his carriage  
or car.

There's no such booming of  
any man's business as that which  
is done by delighted customers.

That Varnish

That Lasts

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**Murphy Varnish Company**

FRANKLIN MURPHY, President.

Associated with Dougal Varnish Co., Ltd., Montreal, Canada

NEWARK,  
N. J.

CHICAGO,  
ILL.



# The Hub

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VOL. LIV

APRIL, 1912

No. 1

## THE TRADE NEWS PUBLISHING CO. OF N. Y. Publishers of THE HUB

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24-26 MURRAY STREET, NEW YORK.

Other Publications of Trade News Publishing Co.:

HARNESS (monthly) ..... per year, \$1.00  
AMERICAN HARNESS AND SADDLERY  
DIRECTORY (annual) ..... per copy, \$4.00

THE HUB is published monthly in the interest of employers and workmen connected with the manufacture of Carriages, Wagons, Sleighs, Automobiles and the Accessory trades, and also in the interest of Dealers.

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### FOREIGN REPRESENTATIVES:

FRANCE.—L. Dupont, publisher of *Le Guide des Carrossiers*, 78 Rue Boissiere, Paris. Subscription price, 15 francs, postpaid.  
GERMANY.—Gustave Mieser, Bohn a Rh. Subscription price, 12 marks, postpaid.  
ENGLAND.—Thomas Mattison, "Floriana," Hillside Avenue, Bitterne Park, Southampton. Subscription price, 12 shillings, postpaid.

## Ninety-five Percent Failure.

When an assertion is put forth with the assurance of fact, it is not long before it is generally respected, not one of those passing it on stopping to ask if it is true.

For so many years we have heard about the great business mortality due to that epidemic called failure.

"They" say five in a hundred are about the number of survivors. If this were true business would be as hazardous as running a powder mill. It is not true, but the unthinking will repeat it right along like a text. There are nearly two million business concerns in this country if the agencies are well posted, and in one year twelve thousand of them went to the wall. Get 95 per cent. out of this if you can.

If it was said that the proportion was found among those using not enough capital, there might be less chance of contradiction.

## Fashions in Treads.

The many patterns of treads on tire covers (when they are not severely plain) leads to the conjecture that there must be a vast deal of trying out in these humpty-dumpty covers.

Such a variety of anti-slips! Some are scored like a

hunk of roast, others have dots and dashes like a Morse alphabet, again there are those scaled like a fish or a snake, while some are broken up with names, or fragments of names.

Must we conclude that all these patterns of corrugated surface are effective in preventing skidding? In time what happens to all these lumps? They must support much weight, and ought to disappear under it, becoming a plain tread cover.

What is a "standard" and correct design for a pock-marked cover? Has one ever been thought out and applied, or will any kind of corrugation answer?

These are interesting speculations.

## Speaking of Bygones.

The Commercial Motor in England has noted, on its part, that there also the function of the be-flowered Beau Brummel salesman is failing to function somewhat, owing to the changed conditions of selling. Those changes are noted, but they are not different from those we have seen. The business is not the same.

Even that exotic, the advertising manager, or publicity promoter, has been "found out," if we may judge by what is being said of him in his own camp. Here is an extract that is taken from an address by an engineer to engineers at a convention:

"The same is certainly true, although not so conspicuous, with regard to the department of advertising; here frivolity, caprice and the artistic cease to hold sway; their subtlety fails, and in the cruel, freezing atmosphere of business common sense they become not only impotent, but ridiculous. The magic art of the advertiser is gone, his charm has faded."

## Wagons Needed.

Reports have it that there is a steady demand for wagons in parts of the country where the season allows of their use. There was also quite a spurt last year. It was and is made much of, just as if so very necessary a vehicle was really relapsing into a state of disuse.

It is very curious how otherwise well-poised people let the chatter of the horseless folk stampede them. These auto truck people have goods for sale, and it is not easy to move such goods at the prices that seem to be needed by the makers, when two horses and a wagon are so cheap, good, and serviceable, so it is not necessary to feel surprised that there is a firm and steady demand for wagons. There always will be.

## The Fads and Fancies.

Such the accessories might be called with which they deck a motor car. They are numerous compared with the like embellishments on a horse-drawn vehicle.

The problem of packing away much of the plunder so as to avoid the looks of a freight car is one that is not solved yet, but there has been much of an advance in practice. Perhaps owners are not so insistent on carrying cargo enough for a dash to the South Pole.

## The Truce is Off.

The many strikes, popping up like mushrooms in a field, too rapidly to take account of, are a very disturbing symptom. The president of the National Association of Manufacturers is sending around extracts from his recent address that would be all right if the speaker could have refrained from the customary fling at the Federation of Labor. It doesn't help to a peaceful solution to call names, although it affords much relief to the feelings.

## Only \$150.

It is stated by one professing to know that the total cost of machining one of the highest class British cars is less than thirty pounds.

"Machining" the selling cost is what tells, probably.

## To Be Looked For.

At some of the association gatherings in England the coach body builders were complaining that the engineering end of the auto industry was going after the juicy body repairing part of the business, and there was call for co-operation among the simon pure. These days we are hearing much more about co-operation than we are about competition.

## Blackbutt Spokes.

Blackbutt is the name of a wood used for light spokes in Australia, and they do say out there that they think it much to be preferred over the kind of hickory that is now imported into Australia.

Our wheelmakers are disposed to complain that so much good hickory stock is shipped out of the country because the foreign buyer is willing to pay a better price.

If good stock is not thought to be good stock in Australia, those builders must be mighty particular. Wonder would they send some of the blackbutt this way that we might have a chance to test a good new light spoke wood?

## Efficiency.

The slogan is now efficiency. This well practiced will enable one man to do about as much as two could previously work out. Hence one man will have a long rest without pay, unless he becomes efficient elsewhere, in which case the vacation mantle will drop on other shoulders.

However, somewhere in the evolution one man becomes

efficient only as a loafer, which the "speeded-up" man will have the satisfaction of supporting. We have never seen this view of it held by any but the labor union organizer, which accounts for a certain coyness among workmen to step on the treadmill belt and learn how long they can go without stopping.

System was very good but efficiency makes it look too simple.

## Evolution.

It may now be clearly seen that the internal combustion engine is in a transition stage. The first cycle of construction would appear to have reached its highest stage of development, and the next stage is disclosed. Like all evolution, it is an overlapping process, hence there is the stubborn conservatism of the established order always fighting a good fight against the "progressives."

The fracas centers about the valve construction. The conclusion of the scrap will give us scraps, also a much improved engine.

It is like a fairy story in mechanics the way this remarkable little giant has made and is making history, and we are by no means turning the pages of the final chapter.

## Thinners.

Turps with high solvent action and oxidizing power takes first place among volatile liquids used for thinning.

Wood turps have sometimes been refined to a point making them of a purity equal to gum turps. Their use is increasing.

## WILL MAKE OMAHA HEADQUARTERS

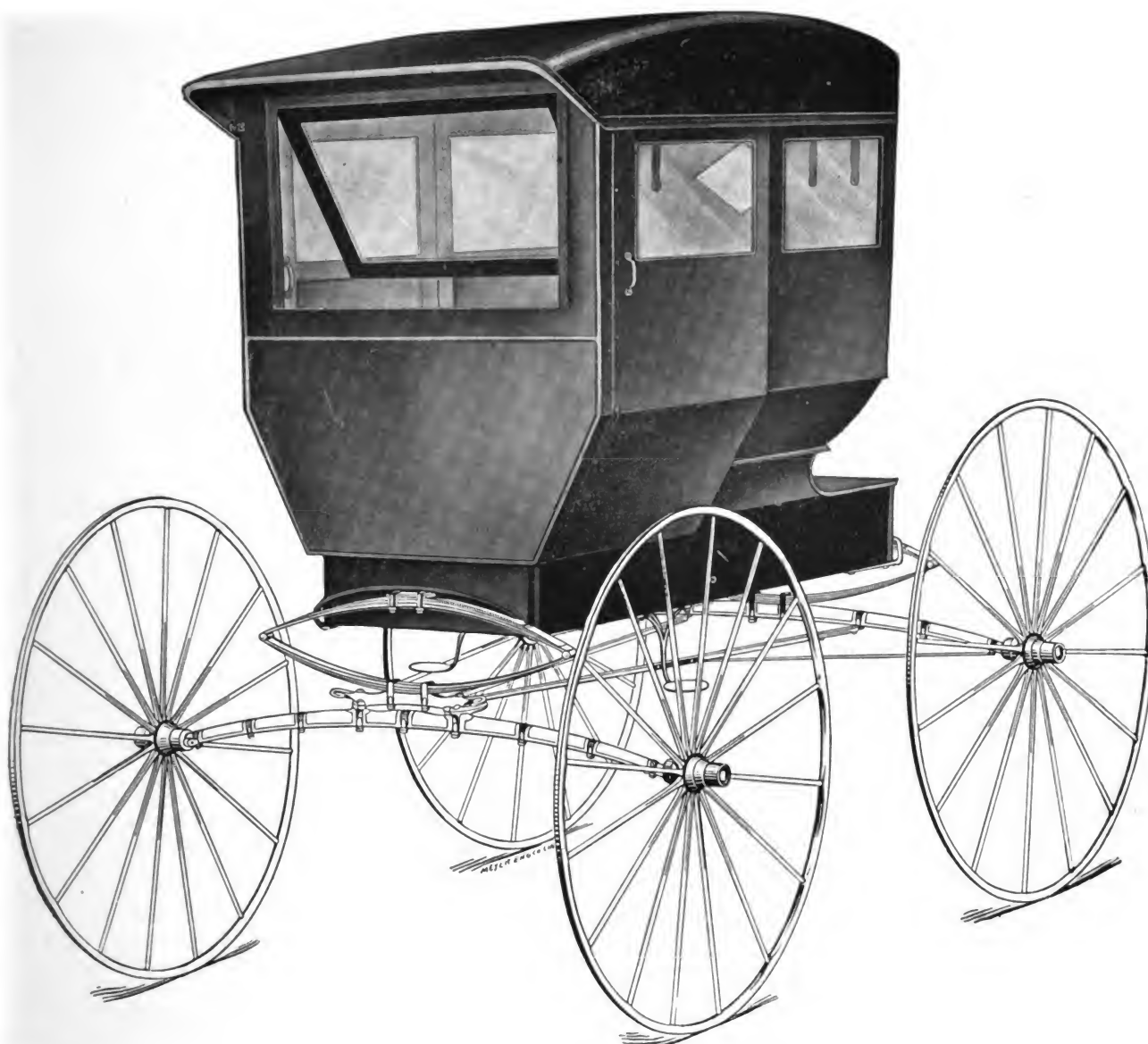
M. L. Goosman, secretary of the Mid-West Implement and Vehicle Dealers' Association, will open permanent association headquarters in Omaha. He will change his residence from Vesta, Neb., to Omaha to take charge, devoting his full time to association business. The change comes about with the encouragement of the jobbers, and the officers of the association feel that it will be possible henceforth for the association to become a powerful organization.

## WAUGH APPOINTED SUPERINTENDENT OF PEORIA SHOW

R. R. Waugh, Peoria's veteran implement dealer, has been appointed superintendent of the National Implement and Vehicle Show Association, and has assumed the duties of the office in the collection of the stock subscribed for the permanent site campaign.

For more than forty years Mr. Waugh has been identified with implement and vehicle interests in Peoria. Twenty-five years of that time he was a traveling salesman, and later entered the retail business. A few years ago he retired from active business.

As soon as active work is started on the buildings at the show grounds, an office will be maintained by the superintendent. He will be in full charge of all the buildings and arrangements. It is altogether likely that he will also be named general manager of the 1912 show.



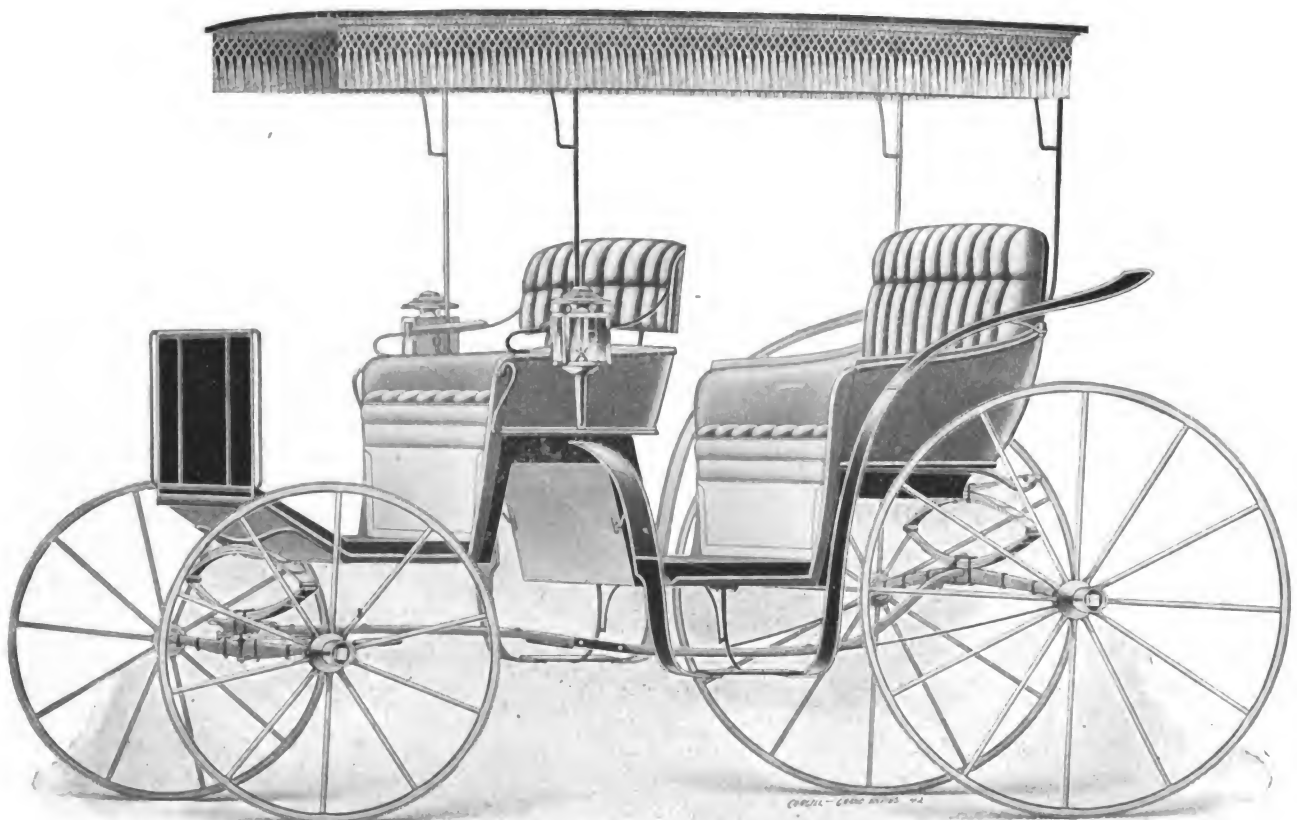
**SLIDING DOOR STORM BUGGY  
BUILT BY PARRY MFG. CO.**



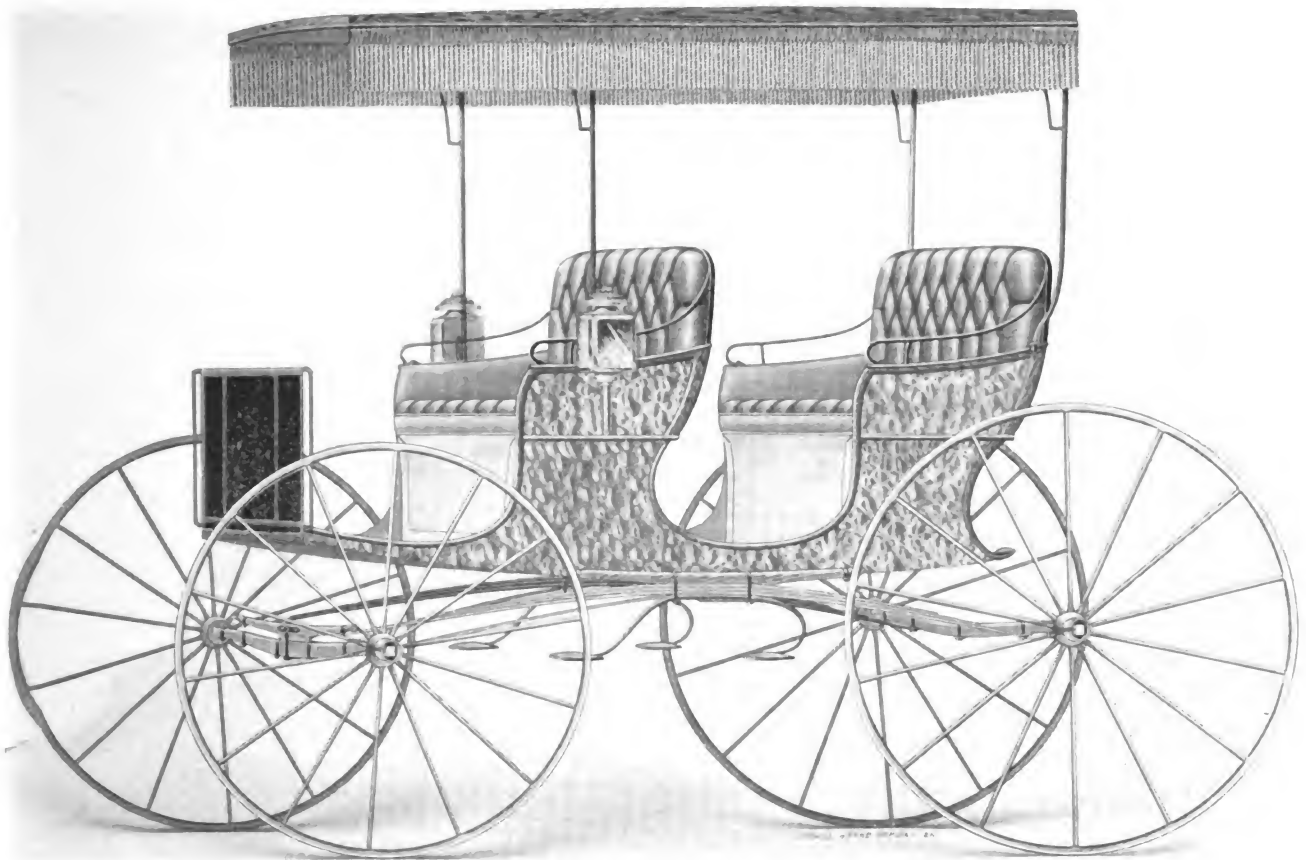
**FRONT VIEWS SHOWING ELABORATE CARVING ON STATE CARRIAGE QUEEN OF HOLLAND**



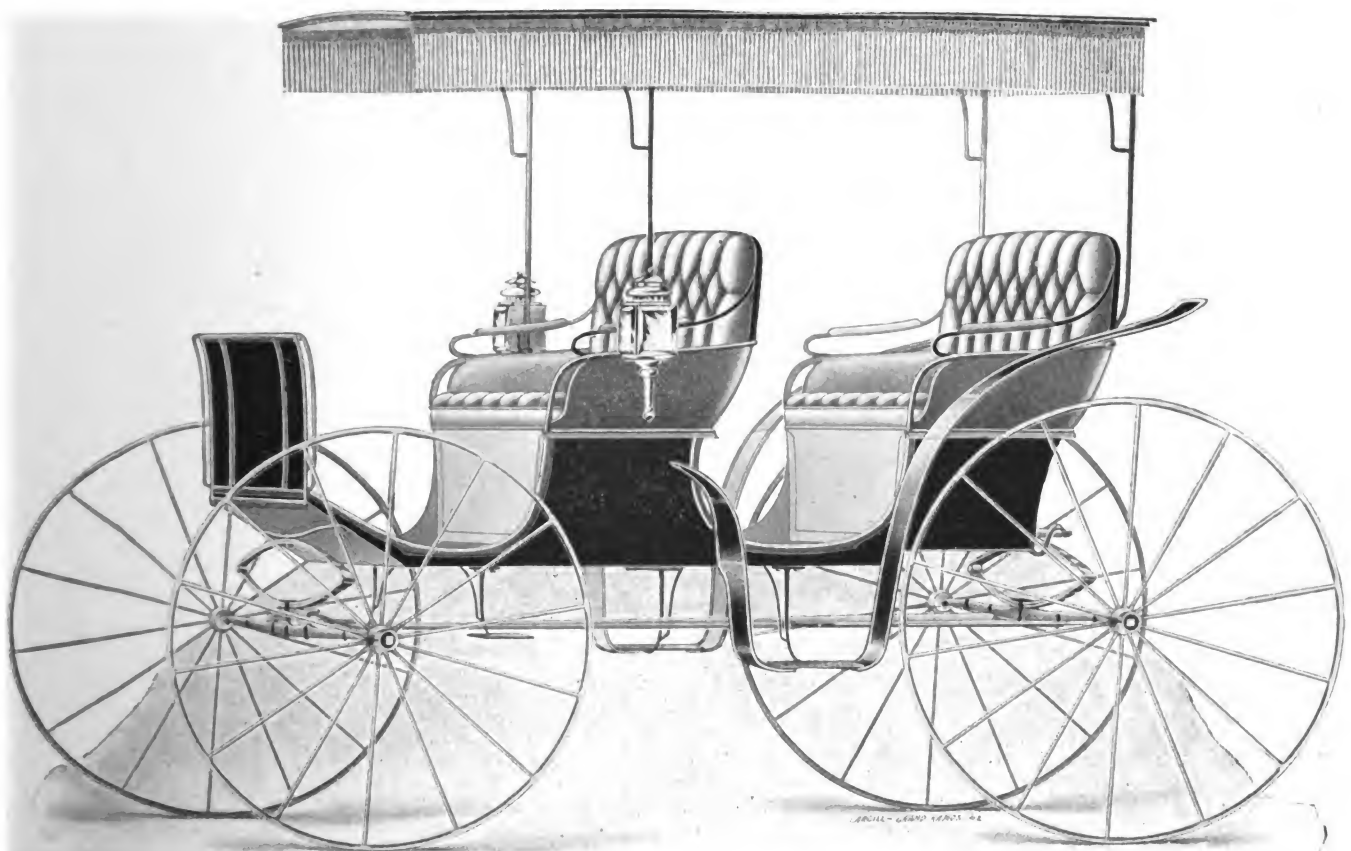
**PRESSED STEEL AUTO BUGGY**  
**BUILT BY PARRY MFG. CO.**



**CANOPY TOP SURREY**  
**BUILT BY H. H. BABCOCK & CO.**

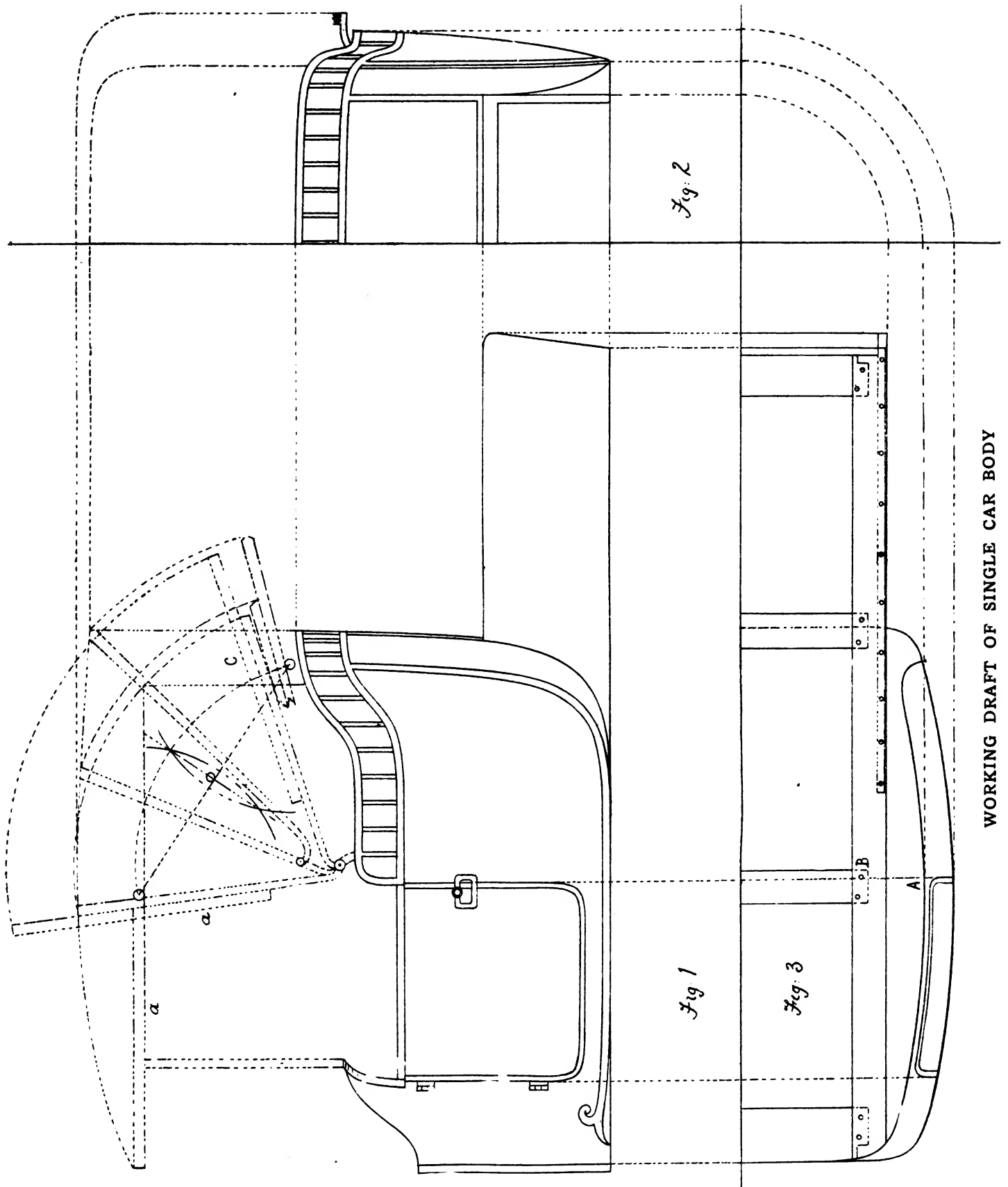


**BROCKWAY-BANNER SPRING SURREY**  
BUILT BY WM. N. BROCKWAY



**FOUR-PASSENGER SURREY**  
BUILT BY H. H. BABCOCK & CO.





WORKING DRAFT OF SINGLE CAR BODY

# Wood-working Shop.

## WORKING DRAFT OF SINGLE CAR BODY

Illustration on opposite page.

The Hub has in previous issues spoken of the wide field that lies before the trade in supplying a light single car to a public eager for a vehicle that would fill the bill of its needs. A smart style of body with a light but efficient engine are the points to control the supply.

Price is the commercial side of the supply, but this is much easier to get at than the points we have spoken of. Improvements in inventions are easier to accomplish than the production of a new style, which has to grow or evolve out of standing lines.

The design in the working draft given here is of upright and compact proportions, which gives plenty of room for seating comfort, and a firm outline to the style of the body.

The body is made with a deep cabriolet quarter and rounded corner pillar, which are still conspicuous features in all kinds of motor carriage bodies throughout Europe and America.

The diagram herewith is given with the direct object to still further accentuate the importance that the trade should give to the production of this class of motor vehicle.

The body being short and deep there is not much scope for a flowing elegance in lines. The surface being limited the designing must be on the lines of a firm basis which the working draft shows.

A rounding corner pillar has an enriching effect where the lines are cramped in distribution; it lends a softening effect to rigidity by which harmony is infused into the whole outline.

A cutting up of the deep surfacing is also widely prevalent; this may be done in waist belt paneling below the elbow line or above the elbow with top rail paneling as in the working drawing.

A top rail paneling gives a distinct relief to the quarter depth, while it adds to the squabbling surface on the inside of the body and so provides a more comfortable seating depth. The panel can either be finished plainly or decorated with striping or flat spindles as shown in the draft. Any of these methods give a contrasting and pleasing art effect to the carriage as a finished vehicle.

The door is made spacious and the bonnet quarter of a good protective width to cover the steering gear and indicators. The canopy head is made to lay down at an angle shown on the chain line C. Many of these heads are when up strapped to the front of the chassis, but they always look firmer and more like a carriage when fitted with side joints, which this head is meant to have.

Fig. 1 shows the elevation of body which is framed up as an ordinary cabriolet, but of course with timbers to suit the design of the body in what it will be called upon to stand, and in carrying out its formation in design. The bottom sides are got out in width as shown on the plan at a b, which is  $8\frac{1}{2}$  in. wide, by their depth off by the door line, viz.,  $3\frac{1}{2}$  in., which is continued round and half check framed to the corner pillar, and is got out of sufficient width and thickness to form the rounding on the corner, which is panel boxed, and the mouldings worked up in the solid. The elbow panel piece may be of one piece and the elbow and top mouldings worked up in the solid.

The boot of the body is solid sided. Seven-eighths inch stuff forms the sides and are half check framed into the bottom sides as shown on the plan Fig. 3. The bottom sides are got out the width of a-b and cut back to allow of the boot sides

being framed to them, the fixing being from the bottom with screws; a light flange is left on the side in the boxing and jointed from underneath. In framing bottom sides to solid sides this is the most workmanlike method as well as the strongest, and which allows the side to present a jointless surface on the outside.

The head is made with horizontal front slat, the upright slat being fitted with siding rod, while the joint of the hinge on the slat is universal to allow it to move in any direction, or simply to hinge up. A boss is a part of the hinge and slides down the rod on the inside of the upright slat when the head is down and up again to its position when the head is up in position. A light fawn-colored waterproofing is the most popular material for covering these heads or hoods, though they are frequently made with enamel leather, as in an ordinary victoria head. When finished in this way they present all the appearance of a carriage more than a motor, and this is the property that should be infused into all motor work as carriage manufacture.

The sizes for building are: Length of body on chassis, 8 ft. 1 in.; width of quarter from door to moulding,  $26\frac{1}{2}$  in.; width of rounding corner, 4 in.; depth of top side panel over mouldings, 6 in.; full depth of quarter, 26 in.; width of door, 23 in.; depth of door, 22 in.; width of bonnet quarter, 11 in.; depth of bonnet quarter on front line, 23 in.; rise of bonnet shield, 8 in.; full width of canopy head on horizontal slat line, 5 ft.  $3\frac{1}{2}$  in.; width of horizontal slat, 2 ft.  $7\frac{1}{2}$  in. The development of the head is fully shown in the elevation and the position of the horizontal slat a-a when the head is folded and down at its various positions.

The body is framed and paneled in mahogany, which is much better than metal sheeting.

Fig. 1 shows elevation design. Fig. 2 shows the half back view of paneling and rounding line of corner and half section of boot, and the various widths of the body projected into the "cant" or plan. Fig. 3 shows the half plan of body, and its widths which are: Across front pillars, 52 in.; across bottom at a-b, 45 in.; across bottom of boot, 35 in., which is the same across the bottom at front of body; width across back of body on corner pillar line, 42 in., which is also the line of the back of the head. The controlling corner moulding line is continued round to the front quarter and finished in scroll leaf eye.

## THE MONTH'S ILLUSTRATIONS

The Parry Mfg. Co. lay claim to the largest carriage factory in the world at Indianapolis, so the size of the illustrations seem to be in line with the general idea of bigness. A feature has been made of the steel body construction with very satisfactory result. Strength and lightness were aimed at and hit. The two examples shown give an idea of how this metal has been handled, and how good the effect is. A body so large as the surrey shown is quite a stunt in this method of body building. The storm buggy is a most popular one, because it affords so much protection and can be changed to a fair weather vehicle so handily. This is particularly the case in the Parry example shown.

The two styles from the factory of Wm. N. Brockway, Inc., at Homer, N. Y., are mighty attractive natural wood finish vehicles. The Brockway-Banner spring surrey has comfort and style to recommend it. The six passenger job is a wagon that

would take the resorts by storm. It is commodious without looking like a mere van, and it is hung in a manner to give the utmost comfort to the passengers.

H. H. Babcock & Co., at Watertown, N. Y., have always been in the first class as builders. The work possesses style, finish and a careful design, with the comfort of the passengers a large consideration. The two surreys are much alike, but there are distinctions of line that will repay comparison.

### HINGING MOTOR BODY DOORS—THE RIGHT WAY AND THE WRONG

The reformers of the world are principally employed in making the crooked paths straight, and in narrowing the broad way. They seek to simplify that which is difficult, and so relax the strain of effort, and strange to say, the hanging of carriage doors comes in for the same contrariety of method which the reformer of life's march has to encounter.

It is a characteristic of the old mail coach that the door was made to hinge from the front pillar, so that it opened towards the horses. The method is still followed in building new four-in-hand coaches in the trade today. The one and principal reason of this plan is that a door hinged to open in this way has the wind acting upon the panel surface when on speed in keeping the door shut from the pressure of the wind generated by the speed.

Another thing is that a motor body door hung in this way will always keep shut when a car is on speed, whereas if the door is made to hinge as is ordinarily done in brougham or landau bodies, which are horse drawn, the windage is against the door and not with it. This is excusable, because a brougham

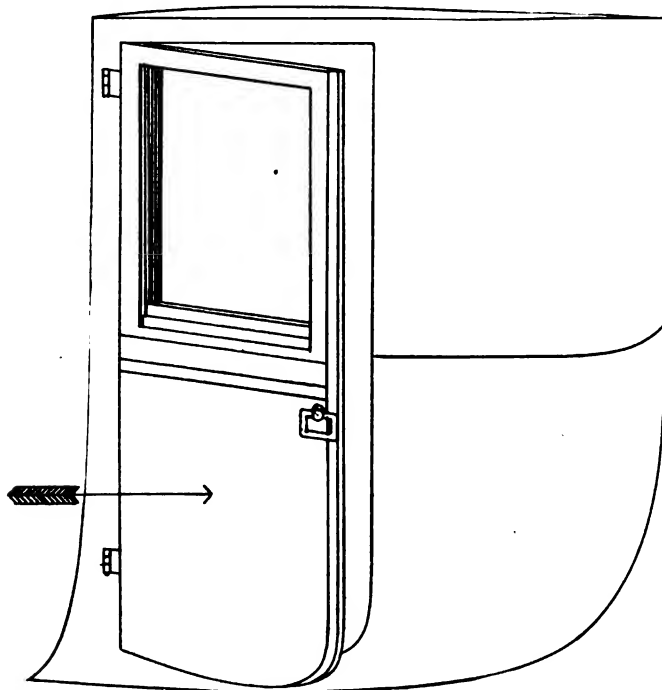


Fig. A

door opening towards the hind wheel forms a shield and protection to ladies' dresses.

It is different where speed is the controlling factor. The doors are hinged to open with the panels towards the front, and thus to receive the pressure of the windage in keeping them shut, and should they be opened from any cause when on speed the windage tends to force them to their closing positions.

In motor body building, the traditions of the horse drawn carriage in its lines and methods of construction are naturally

followed, even to the hanging of doors, without the thought of the altered conditions in traveling speed imposed upon the two vehicles.

Fig. A shows the outline of a motor coupe body with the door partially open, and hinged to open towards the engine, which is the correct way. The windage, when the car is on speed, presses in the direction of the arrow, and so keeps the door from opening even if its shutting should be faulty.

In this class of motor body the door is oftener made to shut on the front pillar as in a brougham, which is manifestly wrong, and has often been the cause of accidents in having the door wrenched off.

Fig. B shows the outlines of an open car body in section, the doors of these bodies are mostly made to hinge out the

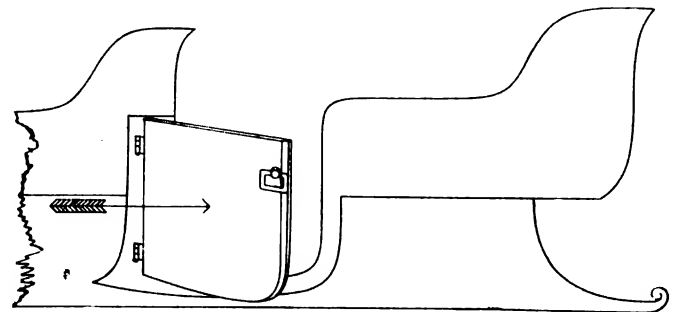


Fig. B

wrong way. The illustration shows the proper way for them to be hung. The door is shown partially open, and the windage from the engine in the direction of the arrow tending to keep the door closed.

If the builders of vehicles, whether employers or workmen, were to ride or made to ride in the products of their handiwork, what an improvement in every department of construction would immediately take place, and how much more comfortable and safe everything would become, because of the direct contact of the producer with the uses of the consumer.

### THE DYING HICKORY TREES—CAUSE AND REMEDY

Within the past ten years a large percentage of the hickory trees have died in sections throughout the states from Wisconsin to Vermont and southward through the Atlantic states to central Georgia.

Investigations by experts of the Bureau of Entomology, U. S. Department of Agriculture, have revealed the fact that the hickory bark beetle is by far the most destructive insect enemy and is therefore, in the majority of cases, the primary cause of the dying of the trees.

The first evidence of the presence and work of the beetle is the premature dying or falling of a few of the leaves in July and August caused by the adult or parent beetles feeding on the bark at the base of the leaf stem, but this work alone does not kill the trees.

The next evidence of its destructive work is the dying of part of a tree or all of one or more trees. If the trees are dying from the attack of the beetle, an examination of the inner bark and surface of the wood on the main trunks will reveal curious centipede-like burrows in the bark and grooved on the surface of the wood. These are galleries and burrows of the parent beetles and of their broods of young grubs or larvae. The girdling effect of these galleries is the real cause of the death of the trees.

The broods of the beetle pass the winter in the bark of the trees that die during the preceding summer and fall. During the warm days of March and April these overwintered broods complete their development to the adult winged form, which during May and June emerge through small round holes in

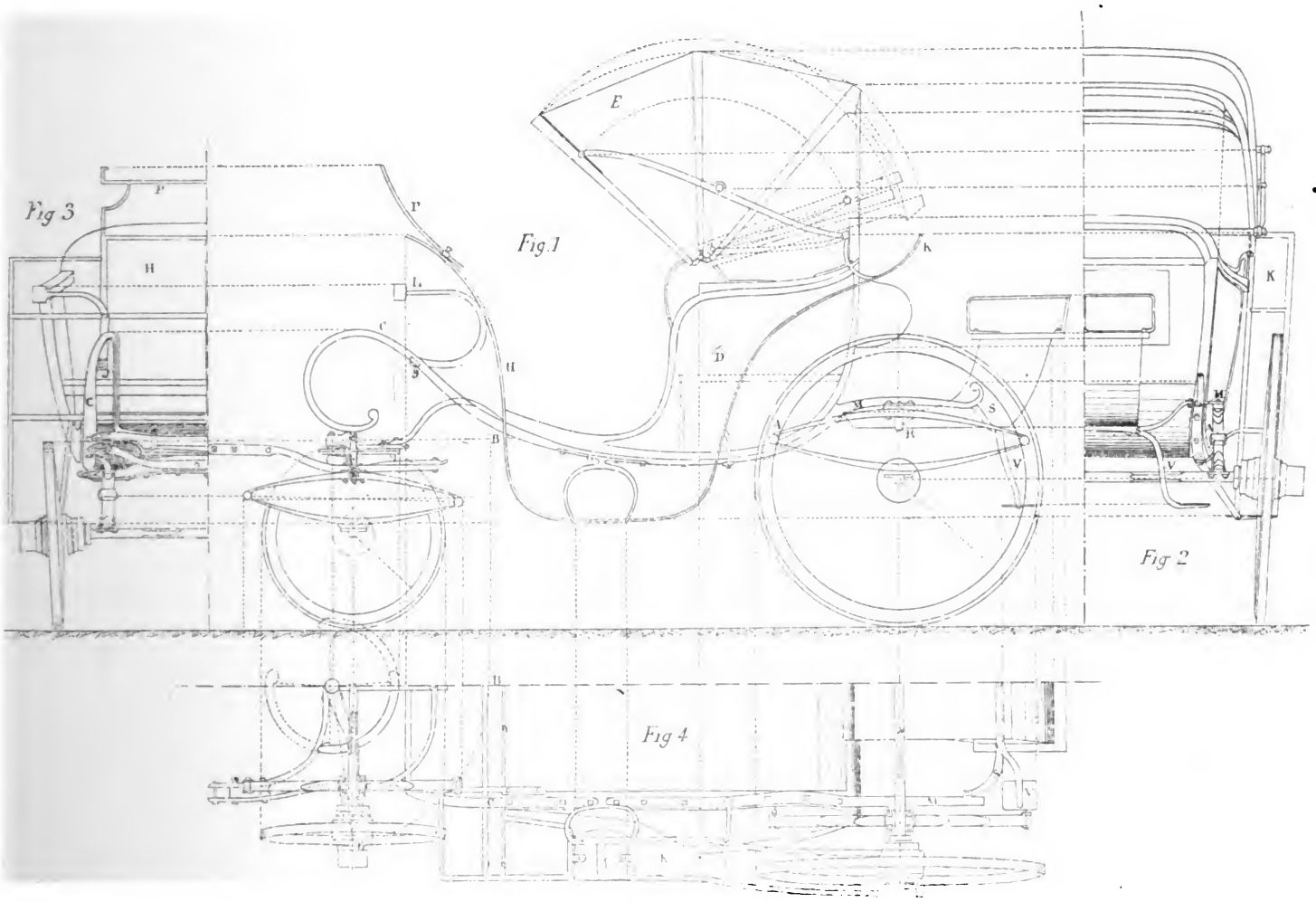
the bark and fly to the living trees. They then attack the twigs to feed on the base of the leaves and tender bark and concentrate in the bark of the trunks and large branches of some of the living healthy trees and bore through the bark to excavate their short verticle egg galleries. The eggs are deposited along the sides of these galleries and the larvae hatching from them excavate the radiating food burrows which serve to girdle the tree or branch.

The recommendations for the successful control of this beetle are based on investigations, experiments and demonstrations conducted by the experts on forest insects of the Bureau of Entomology.

The best time to conduct the control work is between Octo-

## PETIT-DUC

The working drawing is from *Le Moniteur du Charronnage* and portrays one of the most graceful of summer carriages. There are four "views." The modification of body form has called for wheels of somewhat larger diameter for harmony. The track of rear wheels is somewhat widened owing to set of springs at outside of body, for the rest the inspection of working draft will give all details. Owing to the reduction of working draft from the original 1/10 meters scale, it would have to be worked out by enlargement. As there is but little doing in such bodies at present, the presentment is more to keep in touch with style than anything.



Working Draft of Petit-Duc

ber 1 and May 1, but must be completed before the first to middle of May in order to destroy the broods of the beetle before they begin to emerge.

The hickory trees within an area of several square miles that died during the summer and fall and those of which part or all of the tops or large branches died should be located and marked with white paint or otherwise.

Fell the marked dead trees and cut out all dead branches or the tops of the remaining marked trees which still have sufficient life to make a new growth of branches.

Dispose of all infested trunks and branches in such a manner as to kill the overwintering broods of the beetles in the bark.

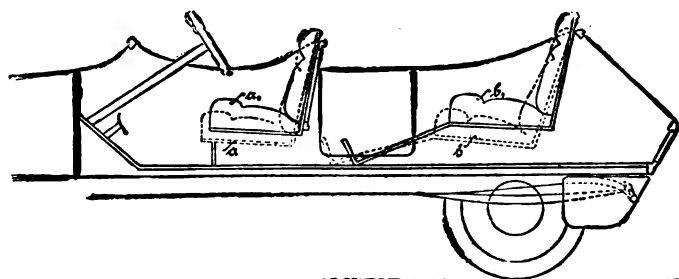
Spraying the tops or branches or the application of any substance as a preventive is not to be recommended. Nothing will save a tree after the main trunk is attacked by large numbers of this beetle or after the bark and foliage begin to die.

## ADJUSTABLE SEATS

Considerable progress has been made by coachbuilders in the design and construction of seats for motor carriages. The difference between the narrow flat dog cart seat which appeared in the first motor bodies, and the deep, sloping and luxuriously upholstered seat of the present day, is enormous. In the early days, chassis manufacturers gave but little thought to the body, and deprecated any efforts on the part of the coach builder which might tend to the comfort of the passengers, if it increased the expense, or if any alteration was necessary for the purpose in the somewhat cramped dimensions of the chassis of those days. Engineers are very fond of pointing to the coach builder's lack of initiative in designing comfortable bodies, but anyone with a knowledge of the trade from '96 onwards, knows very well that the slow development of motor coach building was more due to the absurdly propor-

tioned chassis and the parsimony of motor engineers in coach building matters than to the disinclination of those coach builders who had commenced to build bodies at that early date, is the conclusion of Coopers (Eng.) Vehicle Journal. Directly engineers recognized that the motor user wanted something more than a box on a chassis, and commenced to design his chassis to accommodate coachwork of reasonable dimensions, the coach builder used all his ingenuity and art to produce bodies which would give the maximum amount of comfort to the occupants.

The present day motor car seats would be a revelation to anyone coming fresh from the upholstery of fifteen years ago. Seat boards are now placed very low and are surmounted with well sprung cushions 9 inches or even more in depth. The cushions are wedge shaped, or the seat boards tilted back to an angle which has been found most comfortable to the passenger, and the back squabbling has been adjusted to suit the position of the body of these seats. Not only has this been done, but many seats are now being made adjustable so that



they are suitable for tall or short persons. The cushions are preferably made in two pieces so that either seat can be adjusted independently of the other. A very convenient addition has been the footrest bar or footstool, and on the introduction of the adjustable seats it has been found necessary to make the footrest also adjustable.

A device which has been recently introduced in Breslau, Germany, carries this idea still further. By reference to the accompanying illustration it will be seen that the front part of the seat is connected with the footrest by means of a board which may be upholstered if desired. The seats can be raised or lowered at will to any position, and can be tilted if necessary. The footrest in conjunction with the seat makes something of a lounge chair, and as it is adjusted automatically with the seat it is always exactly in the right position. The obvious defect of the arrangement is that the interior of the car is somewhat encumbered by this footrest, but the device is certainly one which will appeal to a good many motorists for touring purposes.

### BELT BUYING MERE CHANCE

The matter of selecting a belt is merely a matter of chance, as there are so many inferior brands on the market. The only way to test a belt is to try it out at a place where it requires an extra good belt to stand the strain, and this can be done at the maker's risk. Almost any belt maker will be perfectly willing to take this matter in hand and sell his belting on approval, providing he is selling a good belt.

### WATER WILL SOFTEN GLUE

No glue has yet been discovered that can lay in water for days at a time without getting soft and losing its gripping power.

There have been a number of waterproof glue substances made and used, and some of these yield splendid results. They are weather proof, and will resist the ordinary absorption of moisture, but they will not hold up under a long soaking.

### NEW ONE IN FIELD

What is said in England of a German tire made now in America: "The Polack Tire Co. commenced operations out here last autumn, when they incorporated their own company in conjunction with the Pennsylvania Rubber Co., of Jeanette, Pa., and they are now doing great things. The American-made tires, from what I have seen, are as good as the best German-made Polacks. There are quite a quantity of makers of solid rubber tires in the States; none of their tires, however, from what I have seen, is likely to succeed as constructed at present. The clincher type of tires held in position by bits of wire is the general form of construction. One firm employs a couple of wires which are vulcanized in hard rubber in the base of the tire, and in this manner expects to keep the tire in position!"

"During the last few months we have heard that a well known tire maker out here intends to manufacture the Continental tire (band section type). The size of the States makes it difficult for any tire company to get properly going until it has arranged for branches all over the country, where hydraulic presses have been laid down. Once the Polack Tire Co. make their arrangements there is nothing here, to my mind, which can prevent them from being a gigantic success. The prices they are charging are reasonable, and this is as it should be, since the labor expenses of manufacturing tires are small compared to the cost of material, whilst the cost of rubber out here is no greater, if not less, than in Germany."

### THE "QUICKWORK" MACHINES

We spoke of these metal working devices a few months ago quite fully, but they are good enough to mention more than once. Mr. H. Collier Smith, whose shops are in Detroit, is an Edison in his way. His machinery does the unaccustomed. Take the shear, for instance, it is true as stated that it is the only shear on the market that cuts reverse (S-shaped) curves without bending the edges or otherwise mutilating the sheet; cuts radii of  $1\frac{1}{2}$  in. or more in any direction or 3 in. diameter or larger hole in center of sheet without cutting in from side, leaving the metal flat and perfect, as though it were separated by magic. Provided with both power and hand drive, interchangeable at will instantly.

The machine meets every requirement of any kind of sheet metal work up to 16 gauge steel, including body, fender and general auto parts, sheet metal work for buildings, mills, factories, ships, ventilation work, etc.

Other sizes are made to cut heavier gauges up to  $\frac{3}{8}$  in. thick steel in much less time and more perfectly than by other methods, thus making the cutter a desirability for every worker of sheet metal of any gauge.

### SLIPPING BELTS

When a belt begins to slip, if the pulley be of cast iron, it can be remedied very simply by drilling a few  $\frac{1}{8}$ -inch holes through the face of the pulley, making an escape for the air, and the belt will cling ever so much more readily to the pulley, increasing the friction, and will help it to bear the load so much better. If the pulley is of wood, then the size of the pulley must be increased to the required percentage to get good results.

### HOW TO STACK LUMBER

Freshly cut or sap lumber when stacked in the yard to dry should be stacked in open piles to permit the free circulation of air. Boards so piled season in about half the time required for those piled in close piles. Open piles, moreover, are not so severely attacked by insects.

## The Foreign Novelties.

We find in Cooper's Journal an auto here pictured that is made for the Commercial traveler's use. It is designed and built by Harrison, of Dewsbury, England.

Looking it over the points are found to be ample room for

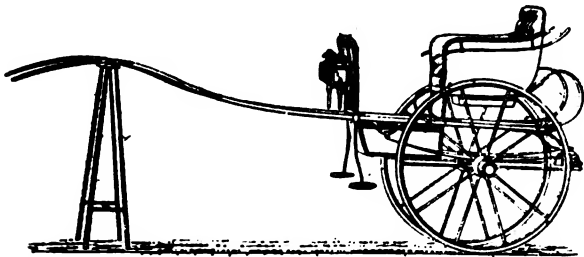


**Auto for Commercial Travelers' Use**

two passengers, protection from the weather as required, comfort and air at other times, and a large boot in the body designed to transport the sample cases, luggage, or any of the requirements of a commercial man.

### Italian Two-Wheeler

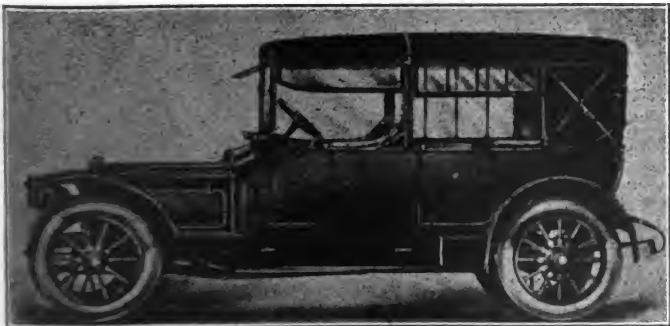
The next following picture is of an Italian cart made by



Ilarino-Porta, and reproduced from the same journal as the others. The suspension of the body with its C spring, and the spring connection to the shafts are both details that are interesting to study. The lines of the body are very gracious, too, and the foot box seems to be the right thing well placed. It must be a gem of ease to ride in, and it certainly does possess style.

### A New Kind of Hood

The next following picture from the same source is a body



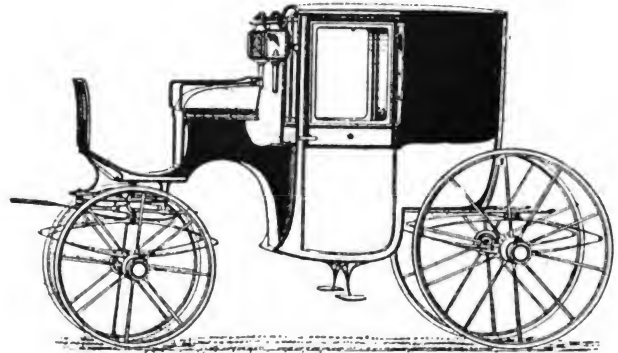
to show a new hood named Janko, which is the property of Lamplugh & Co., Paris.

We show the hood raised and curtains drawn. The front part of car may be left open while rear is closed, as will be noticed by study of the illustration.

The idea of the hood is the treatment of the curtains. They are slid into the roof of hood when not required, and they fold down with the hood. To make them fold nicely vertical insertions of elastic are so placed to take the natural folds of the side curtains on lowering.

### Coupe

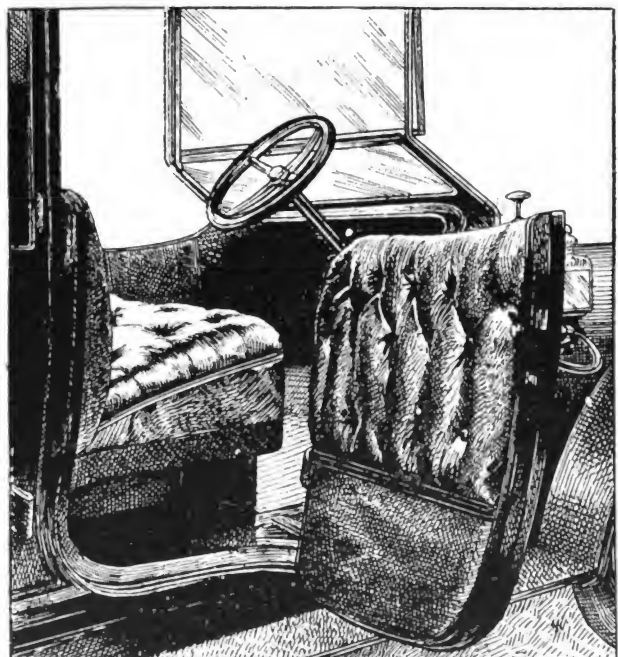
Also from the same source we show a coupe that has a certain look of elegance and lightness. The treatment of the lines of body at the pump handles to harmonize with the



sweep of the under part of door gives a nice effect. The light metal pump handles add to the idea of lightness. We suppose builders have not yet forgotten how to build such vehicles.

### Interior Fittings

We find two examples of interior treatment that are interesting. The first is an arrangement to make the front seat accessible on the driver's side. It is an example from the



repository of Alford & Adler, excellent foreign builders. A study of the way of working out the idea will afford its own description. It is something of a squeeze, but it works, and

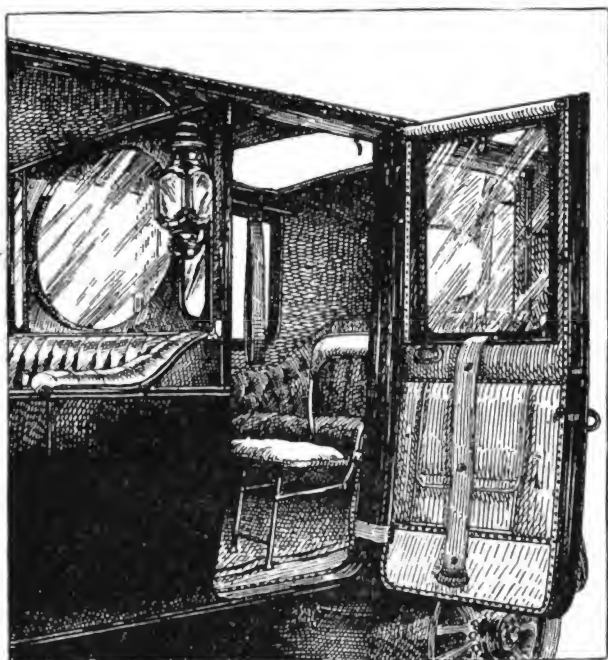


is so very much more sensible than to have one side of the car closed.

The next picture is an interior of limousine credited to Thrupp and Maberly, the high class English builders. The idea has been to get much light inside. The front circular glass with side panel glasses is a very nice treatment, and altogether the amount of light secured should have amply satisfied.

### Rubber Fight on in France

The parliament proposes a small tax per pound on raw rubber, with a view to helping out the French African rubber industry. The tire makers are issuing a call to arms for a brisk opposition. They are ready to show French rubber is inferior, that its use is hardly anything compared with the good kinds, and that if the tax is insisted on the French

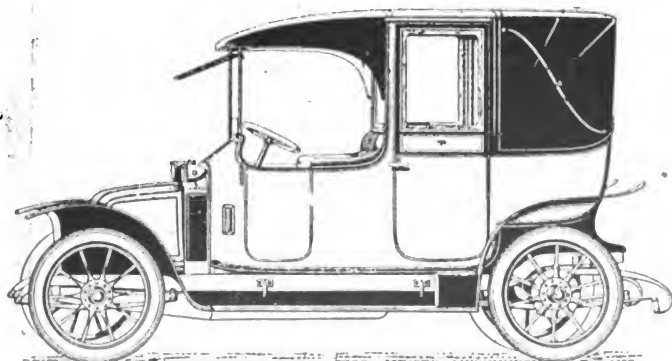


makers will move out of the country to erect factories for the purification processes and reduce wages to a world competition basis in the French tire factories. When a tax ceases to be for revenue only, but becomes protective of special interest, how soon trouble begins and how long it continues.

### Foreign Taxicab Fashions

The illustration here attempted is from La Carrosserie Française, showing a landaulet intended for public service.

The inclosed driver's seat, or foredoor as it would be named



by some, is said to be a prevailing practice. The hood falls, leaving the door pillars and frame standing, thus doing away with much complication. The front seat hood, wind-shield,

ventilator in dash, and such little comforts are very universal and not at all seen in taxis used in this country. In fact the example shown is much more elegant, and costly, we presume, than the threshing machines we build for hire.

### French View of Worm Drive

Mr. Brasier, whose car is one of the French premiers, says he has satisfied himself that a carefully produced worm and worm wheels are as efficient at all speeds as bevel gears; that they are silent, show no appreciable wear, and run to no higher temperature than an axle with bevel gears.

Now we will let him tell the rest of it. He says:

The reason why I have sought to adopt worm drive to small cars is simple. Small cars have small motors which are obliged to run at a high number of revolutions, and in order to provide for the comparatively low number of revolutions of the road wheels, when on direct drive, it is necessary to fit a very large crown wheel and a very small driving pinion. But we are limited in the diameter of the crown wheel, and the driving pinion must consequently be made smaller. Nevertheless, this small pinion does what is asked of it, and even does it well, because it transmits low efforts at frequent intervals, notwithstanding that its teeth work one by one, and not two or even three together, as in the case of larger driving pinions obtaining their power from a big, low-speed motor.

It will be asked, Why change it then? For the reason that the small bevel pinion has not only to support the efforts due to the power of the motor, but has also to withstand directly all road shocks, and particularly all braking efforts. Under these conditions it has some really hard work to do, and it is only a proof of its robustness that it does not break more often. I believe that by replacing this small, hard-working little pinion, which only works by points, by a big-surfaced, well-made worm—it is true that it is not easy to make—is for the good of all motorists. I have applied this system to my new 10 h.p. four-cylinder models of 67 mm. by 110 mm. bore and stroke, after having tested it for several months on all kinds of roads with a car weighing 26 cwt. empty, and driven by a motor developing 28 h.p. to 30 h.p. As the result of these tests, I am convinced that with a correctly-cut worm the only difficulty has been with the ball-thrust bearings. This difficulty has been overcome. As the result of experiments now being undertaken with larger models, I shall decide whether the use of the worm can be advantageously applied to heavier and more powerful cars.

To this testimonial in favor of worm drive might be added the information that the Brasier factory is not the only one in France having closely studied this question. In addition to Darracq and Gregoire, where worm drive is employed on a few of the models, four or five other firms might be mentioned as having made preparations for producing touring cars with worm drive.

### WERE CORDIALLY RECEIVED

Phil. E. Ebrenz, manager of the carriage department of the John Deere Plow Company, and also president of the Implement, Vehicle and Hardware Association of St. Louis, W. H. Roninger of the Banner Buggy Company, and John D. Manley, president of the John D. Manley Implement Company, took a trip up to Washington, Mo., recently, on the invitation of Mr. Busch, president of the Mississippi Valley Implement & Vehicle Dealers' Association, to meet with Club No. 2 of that organization. The three gentlemen mentioned met with a most cordial reception. The Implement, Vehicle and Hardware Association of St. Louis intends to send representatives to the meetings of the various clubs in the Association, with a view to creating a better feeling between the jobbers and dealers.



# Smith Shop.

## FRICION DRIVE

When the sliding gear transmission first began to be used, manufacturers turned to it in the belief that in it they had found the ideal system. Since then the number of applications of the system steadily has increased, and though it is probable that the very fact of its widespread adoption may perhaps have furthered the belief that it really is the ideal system, the fact remains that in every sense, strictly speaking, it is not.

Such systems are better mechanically, structurally and in material than they were several years ago; many of their disadvantages have been eliminated, but the objection that obtained then still obtains in a measure, and there are not a few engineers and others who are of the opinion that a satisfactory solution of the transmission problem still remains to be reached.

In the planetary type of transmission the principal disadvantage of the sliding gear type, embraced in the necessity of meshing two gears rotating at different speeds, is eliminated, but another objection in the form of excessive weight and size is raised. For light cars, or for very heavy commercial vehicles, there are those who incline to the belief that in it is found the real solution of the problem, and there are any number of instances where it has proven eminently satisfactory for both of these kinds of work. But for the average touring car it scarcely is possible, and this for the reason that at least three speeds forward and reverse must be provided, and the very apparent tendency is toward a more general adoption of four speeds ahead.

But there is another form of transmission that is very little used, comparatively speaking, and yet which combines the advantages of delightful simplicity, cheapness of manufacture, low up-keep cost and such ease of operation that no skill at all is required to obtain the best results. It is the friction transmission, and there is just about a baker's dozen of manufacturers in the United States who use it. Of course, all transmissions are friction in principle, the word transmission in this case being used in the broader sense, in which it is correct, and meaning all of the component parts by means of which power is transmitted to the road wheels and motion is imparted to the car. Most clutches are essentially friction devices, and, delving still deeper, the movement of the car is dependent upon the friction between the driving wheels and the road.

The mere word "friction," as applied in this sense, however, is a misnomer insofar as it means "rubbing," and therefore implies that rubbing must take place in order to produce resistance. In reality, the resistance is obtained not only during the rubbing but also before the motion or rubbing takes place.

In the friction transmission (change speed mechanism is the more correct term), the usual arrangement embraces a driving plate or disk, direct connected to the engine by means of a universal joint, and one or more wheels slidably mounted so that it or they may be moved into contact with the driving disk, motion being transmitted to the road wheels usually through the intermediary of a chain or chains. The face of the driving disk is perfectly plain and smooth and the contact rim of the driven wheel which presses against it is faced with paper fiber, this material having proven after continued test to show the highest coefficient of friction, which means literally the least amount of slip or the greatest possible adherence to the smooth surface of the driving plate.

Naturally, there must be a certain amount of slip by reason of the fact that the driving disk imparts a rotary motion to

the driven disk, which rotates at right angles to it. And while it has been pointed out with irrefutable logic that slip means wear, the actual amount of wear that really takes place is so small as to be almost negligible. In fact, in strict justice to exponents of the friction disk transmission, it is only fair to say that with ordinary usage, the friction material seldom if ever requires renewal oftener than once a year. When it does require to be replaced, that the renewal can be made almost in the proverbial jiffy and at an outlay that is purely nominal, merely serves to enhance the value of the arrangement.

The principal advantage of the friction transmission from the manufacturer's point of view, as well as from the user's, is that its proper manipulation requires no skill. There are no gears which can be stripped or chipped through careless or ignorant handling and almost an infinite number of speeds can be obtained by means of a single lever, which moves only in two directions—backward and forward. Similarly there is no clutch and even the remote possibility of clutch trouble of any kind is obviated. This in itself should prove a valuable feature, particularly for commercial vehicle work, where it is notoriously true that much of the trouble that is experienced originates in this part of the mechanism.

Of disadvantages, the system has few, the statement that the friction obtained is inadequate to permit really steep hills to be climbed having been disproven time and again and by different manufacturers. To the "doubting Thomases" who still incline to the belief, it should suffice to state that on any number of occasions friction driven cars have been driven up hill until their motors stalled, demonstrating beyond cavil that the friction obtained really is sufficient. There is one real disadvantage in the system, however, and that is that when the greatest power is required from the engine, viz., when running on lowest "gear," the greatest slip takes place. This is because at the lower ratio of rotative speeds between the driving and the driven members, the driven disk presses against the other near its center, where the rotative motion of the driving disk on the friction material of the driven disk is more exaggerated than it is when the driven disk is near the periphery of the driving disk.

Another objection, though it is one that is largely hypothetical, is that for greatest efficiency it is essential that final drive be by means of a single chain or a pair of chains. Owing to the fact that the driven disk must be placed at right angles to the driving member, shaft drive would necessitate such a number of gears being employed that efficiency would suffer. The cost of manufacture also would be increased considerably because of the gears and the mechanical difficulty in ensuring positive and perfect alignment at all times. Just as it is with other things, however, methods of chain driving have been greatly perfected within the last few years, until at present there is a well-defined tendency to return to chain driving methods because of the efficiency and silence which they permit. This is particularly so in the case of the "silent" type of chain, the efficiency of which, it is claimed, is considerably greater than is that of gearing.

One of the first manufacturers to place a friction disk driven car on the market was the Buckeye Mfg. Co., of Anderson, Ind., and the mere fact that its product, the Lambert, has stood the test of some 10 years without having undergone any radical alteration as regards its transmission should go far toward proving its merit. The friction transmission is applicable to commercial vehicles as well, and there are those who opine that it is in this field that it is most useful because of the fact that skilled operators are unnecessary, and also

because of its low up-keep cost, both of which are vital factors to the operation of motor trucks on a paying basis.

While radical ideas concerning friction drive mechanisms are few, something really new seems to have been evolved by a Frenchman, who has adapted his friction speed changing device to a Sizaire-Naudin car. The driving disk is corrugated, there being as many concentric grooves as there are to be changes of speed. The driven disk is on a spherical joint slidably mounted on a squared part of the driven shaft, and its edge is of an obtuse V shape. The corrugations in the driving disk are cut to the same angle, but the nearer they approach the center of the disk the more the V's incline their openings toward the periphery, so that while the driven disk is at right angles to its shaft when the outer groove is engaged, it departs more and more from the right angle as it is moved to one after another of the smaller grooves. Apparently the advantages of this device are that there is practically nothing but rolling contact between the disks, but while this holds good in large measure even when the inner grooves are engaged, the friction of the spherical joint due to the angularity of the driven disk to its shaft and the heavy pressure, would seem to offset this advantage.—The Motor World.

### A FEW WORDS ABOUT SPRINGS

The making of springs has passed through many phases. In the first instance each plate was beaten out by hand hammers from the rough steel billets, then a rough method of rolling the plates was adopted, and it was not until 1826 that the rolls for rolling the metal into the most desirable shape were invented and the English spring steel makers were able to compete with the Continental ones, chiefly German, and to drive them out of the market.

The particular shape given to the steel by these rolls had previously been given by hammering the plates, producing a slight hollow when two plates were fitted together. The object of this hollowing of the steel was twofold, the edges could be fitted more closely, and there was a little space for a hard lubricant. Many modern springs have the flat surfaces ground so that they fit closely across the face, and there is a freedom from roughness which enables one plate to slide freely over the other. This smooth grinding of the flat of the spring has its disadvantage, for there is no place where even a little grease may lodge to provide lubrication.

The object of fitting the springs being to provide a sufficiently strong elastic body between the axle and the chassis, movement on the part of the component leaves is inevitable, and under pressure this movement of metal on metal will squeeze out all lubricants and produce a noise or squeak. The movement naturally destroys the continuity of the paint on the edges and allows water and dirt to get into the interstices and help to dry up the oils, etc., used. The preparation of the springs for their work is of importance, for if they are made in the best modern manner there should be some space in the center of the plates throughout their lengths.

The plates, after being finished, should be coated on both sides with a thin coat of paint in which japan is the chief component. The object of this is to protect all those parts of the spring which do not rub one on the other. The plate should then be coated with a mixture of hard Russian tallow, and graphite, and put together, the surplus grease being cleaned off. When this procedure has been followed faithfully the springs do not rust up or make any noise so quickly as when they are merely coated with some rough sort of thick paint or grease. Motor carriage springs should be taken off at least once a year, and properly cleaned and painted. They are usually fitted where they are not easily reached for cleaning and in a position where wet and mud accumulate.

The conditions surrounding the places where the springs are put to do their work are the very worst possible for the

successful performance of that work, and care should be taken, first, of the perfect manner in which they are turned out, and, secondly, the frequency with which they are properly overhauled.

### NO ADVANCE MADE IN TRANSMISSION

Mr. Sturmev, whose opinion is highly thought of in England, where he lives and observes, writes about transmission in *The Motor* in a way that will cause many to say: "Guess that's so." We extract a part of his article and it follows:

So far as we of the pleasure car world are concerned, the question of transmission—or rather change-speed gear—remains pretty much as it was when the Panhard No. 5 won the Paris-Bordeaux race. It is true we have improved its details and have enormously improved the materials of which it is made, and for the most part the shaft and gear, or worm, has replaced the chain for the final drive. The gear itself, however, is the same old barbarous atrocity of sliding rapidly revolving gear wheels into mesh. Our neighbors of the commercial car have done something to improve on this state of things and, with them, the ever-meshed gear, of one sort or another, is rapidly replacing the old design. Still, with neither has perfection yet been reached, and it is more than probable that the ultimate transmission system, both for touring cars and commercial vehicles will be something very different to anything we have with us today. The jerk and jar of a stopped gear, irrespective of the method of application, are undesirable features and the ideal is certainly in the direction of a transmission which shall be infinite in its variations from absolute zero to maximum, and which shall in practice give results, so far as smoothness and flexibility of control are concerned, equivalent to that which is associated in our minds with the action of steam engines and electric motors.

### WORKING ALUMINUM

Aluminum is not worked as often as steel, wrought iron, cast iron or brass, and the average machinist does not know how to machine it. On all cutting except tapping, work the metal dry. Aluminum, like other cast metals, is lifeless; that is, long curling shavings cannot be taken off as with steel, but rather a shower of small chips as in cutting cast brass.

The metal is easily torn, especially in thread-cutting in the lathe, where, if not careful, the tool will dig in and rip out rough threads. In making fine, smooth threads, take several light finishing cuts. For a nice surface finish, either in a lathe or planer, use a broad tool, but with a light cut, and employ the same caution as in thread-cutting to prevent digging and tearing the metal. Aluminum can be cut as fast as brass.

### TO TEMPER A CHISEL

Heat the chisel about 1½ in. up from the cutting edge to a dark cherry red, then cool the edge in water and rub it with an emery stick or a whetstone. Let the heat run down to a dark straw color, then cool the edge again and brighten as before. Let the heat draw to the color of pigeon blue, then cool the entire chisel. Chisels tempered this way will stand much better than those tempered in the ordinary way.

### THE BODY AS FITTED TO CHASSIS

Mr. Austin read a paper before the Institute of British Carriage Manufacturers that contained interesting points. We extract a sample:

The general design of the carriage work is limited in a measure by the shape of the carriage, and within certain bounds carriage work could be built which would harmonize sufficiently

for ordinary purposes with most makes of chassis, the limitations being due to the differences in measurement and shape of the body space of the chassis.

The exigencies of the chassis manufacture demand that rigid mechanical forms be employed; therefore the body work must harmonize, and, while there is not the same liberty of design as in a horse-drawn carriage, yet some of the monstrosities seen in earlier days need never have appeared if the carriage builders had asserted themselves at the commencement of the automobile industry and adapted their energies to meet the altering conditions.

The mechanical portion being so much the more important part of an automobile, it must continue to govern the general design. The urgent question is the prevention of the raising of dust and protection from dirt in bad weather, the varnish being often ruined by the sand and grit thrown on it by the wheels.

In England the open car, or one which can be opened, is more popular than on the Continent, where the limousine type is liked more than the landaulet, the one drawback of the latter being the unpleasant backdraught experienced when the hood is lowered. Some means of overcoming this trouble is badly wanted, and whoever discovers the way will be amply rewarded.

The provision of as complete a cover as that of the landaulet, but so light that one man can operate it, has been recently attempted, but none come up to the ideal. The present-day demand for low and, therefore, sloping seats necessitates the lengthening of the body, and either the chassis must be lengthened or the body overhung (a bad practice). Lowering the seats means bringing down the total height, and this causes trouble in the folding of landaulet bodies.

The demand for the all-enclosed body is growing, but there is a difficulty in so arranging the supports to the roof that a clear front and side view can be obtained.

### **SPEAKING OF BREAKAGES**

Three hundred cars were tabbed for breakages. They were "table run," all makes, types and conditions of cars so as to get a fair average. The table shows up aluminum as the weakest sister.

Broken aluminum castings, 104; cast-iron castings, 27; crankshafts, 12; connecting rods, 9; connecting rod bolts, 17; valves, 8; universal joints and pins, 22; differential gears, 14; crown bevel wheels, 10; bevel pinions, 13; hubs, 9; brake drums, 3; steering gear boxes, 6; front axle forgings, 3; front axle tubular, 5; tubular case of rear axle, 7; springs, 16; steering joints and connections, 2; pressed steel frames, 8; flitched frames, 1; tubular frames, 6; wood wheels, 11.

### **ONE WAY TO WELD AXLES**

First measure the stubs so as to have the axle the same length when finished. Then heat the axle and stub. Cut off the axle and scarf down the end a short ways. Scarf down the stub as nearly the same as possible. Then take a heat in a clean fire, but do not have the heat heavier than is needed.

### **TREATING HIGH SPEED STEEL**

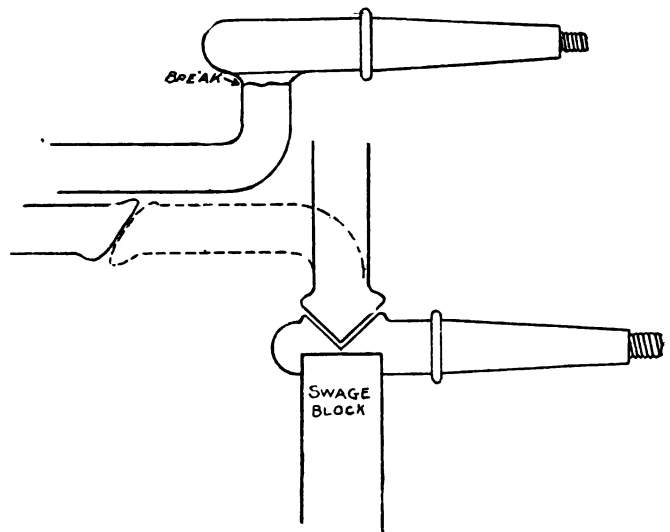
It is surprising how unconsciously some will hammer high speed steel at a low heat as if refining carbon steel before going to harden. This is good practice for a chipping chisel, but bad practice on lathe tools. It is also important that high speed tools be so forged as to have a good backing of metal in order to carry away the heat by absorption into the heavy backing. While it is also important to reduce the cutting area of tools to reduce the friction as much as possible, a machinist can very often help tools in grinding.

As to hardening, wherever it is practical to use compressed

air as the cooling medium, use it. Oil can be used on some such tools as cannot be very well evenly cooled with air. Hot salt water may be used in cases of emergency. On threading dies use air in preference to oil. Oil is good by drawing down afterwards to a golden color or a little lower. But get the hardness by the proper heat in the first place, then experience will determine as to whether it is too hard or not.

### **REPAIRING BROKEN AXLE**

Take accurate measurements of the axle, so that when finished it will be the same as it was before it broke. It would not be wise to weld it where it has proven itself the weakest, so look for the strongest and easiest places to weld. These places are the straight part of the stub and the straight part at the bottom. Starting with the stub end cut off the part that is broken as far as the fillet, then upset. In doing this cool off the end so that when the metal is increased in size it will be in the right place for welding. Then cut out a V-shaped piece in which to weld the stem. The V should be cut off at an



angle of ninety degrees, or so that a square placed in cut will touch bottom and sides, and the cut should be nearly half the thickness of the iron in depth. The stem part is then forged the same as a bolt head that is made from the solid, either by drawing out or upsetting on the end and forging into a square head. Two sides are then cut down on the head which forms it into a V-shaped piece that will fit into the V in the stub. Then take a good, clean welding heat, place the stub end in the swedge block and weld the V-headed stem into the stub, using a round edge set hammer to do the welding. If good heats are taken and a good helper does the striking, Bert Hillyer in American Blacksmith, says that a good weld can be made.

### **FRICTION DRIVE**

Henry Sturmey, an authority, says it is a mistake to suppose friction drive a cheaper construction. He says: "I am one of those who think more of a friction drive than do the majority. There is one point upon which too much stress is laid by its advocates, and that is, the point of cheapness of construction. That a friction drive is cheaper to construct than any other form of transmission gearing is undoubtedly a fact, but the difference is not so great as some people imagine. We must remember that it is not only the cutting of the two—or three—discs, but there is a certain amount of mechanism required to carry the discs and operate them, and the total construction has to be set against the cost of making an ordinary three-speed sliding gearbox, with a straight through gear lever. Gear cutting has been reduced to a science in the

last ten years, and the enormous amount of it which is now done in connection with motor cars has vastly decreased the cost of doing it. Moreover, for the small cars, which are usually fitted with friction drive, the size of the sliding gearbox has been reduced to something very small and the amount of material brought to a low point, and I do not think I am far out when I say that the result is that a three-speed gearbox with a straight-through change, for a 6-8 h.p. car, will not cost today more than 25 per cent. of what it cost ten years ago, and when the cost of the modern simple gearbox is set against the cost of a friction gear, there is very little in it."

### TO SHARPEN CHISELS

In honing a chisel use a good grade oil stone. Pour a few drops of machine oil on the stone, or if you have no machine oil, use lard oil, or sperm oil. The best results are obtained by using a carborundum stone; it cuts faster than most others.

Hold the chisel in the right hand and grasp the edges of the stone with the fingers of the left hand to keep from slipping; or better, place the stone on a bench and block it so it cannot move. You will then have both hands free to use in honing your chisel. If you have two hands free, grasp the chisel in the right hand where the shoulder joins the socket; place the middle and fore finger on the blade near the cutting edge; rub the chisel on the stone away from you, being careful to keep the original bevel.

Never sharpen the chisel on the back or flat side; this should be kept perfectly flat. For paring, the taper should be long and thin. The longer the bevel on the cutting edge, the easier the chisel will work, and the easier it is to hone it. Bevel edge chisels are more easily sharpened than plan edge chisels, as there is not so much steel to be removed in sharpening.

In case the chisel is badly "nicked," it will have to be ground on a grind stone before honing. Never use a file. Be sure to use plenty of water on the stone, so as not to draw the temper of the chisel, and be particular to keep the original taper of the bevel. After grinding, hone on an oil stone as above.

### AN INDISPENSABLE TOOL—THE CHISEL

While not ordinarily a finishing tool, a high grade chisel with the right amount of clearance in the blade, properly ground and honed, produces a very smooth surface.

The chisel should be absolutely level on the back. An inferior chisel is ground off on the back near the cutting edge, with the result that, in use, it tends to follow the grain of the wood, splitting it off unevenly, as the user cannot properly control it. The level back allows the chisel to take off the very finest shaving, and where a thick cut is desired, it will not strike too deep.

Socket chisels are preferred to tang by most carpenters, owing to the fact that they are stronger and that the handles are less apt to split. In foreign shops the tang chisel is still largely used. The tang chisel permits the user to get closer to his work.

Beveled edges are preferable to plain blades as they tend to drive the tool forward and also have a greater clearance.

The butt chisel, owing to its short blade, is adapted for close accurate work, where not much power is required. It is particularly suited for putting on small hardware, which does not necessarily require the use of a hammer. It may be used almost like a jack knife with the hand placed well down the blade toward the cutting edge. The short blade and handle make it convenient for carrying in the pocket.

Dust, if allowed to remain upon a bearing, forms a blanket that retains some of the heat, which would otherwise pass off. This causes the bearing to run warmer than it otherwise would, and also increases the danger of fire should it become overheated.

### HOW TO TREAT PLAIN BEARINGS

Deep oil grooves should be cut in the linings of plain bearings having no reservoirs. Also, a recess cut in the babbitt and packed with felt or cotton waste will aid in retaining the oil, which is necessary for the successful operation of this style. For cutting grooves a good tool may be made from a wornout flat file. Heat and bend at right angles about 1 inch from the end, then grind to a V shape with the point slightly rounded and with a cutting edge toward handle, after which restore to about the original temper. This tool, when drawn where the groove is desired, will by a few cuts make a channel of any depth or width wanted, without damaging the surface of the lining, as an ordinary cold chisel or channel cutter does. Made in the same way, except with a round end, it is a very convenient scraper for general use.



### GAUGE FOR TWIST DRILLS

Take a strip of steel and bend it to a U shape. One of the arms about 18 in. long, and the other about 4 in. long. On inside of the longer arm rub chalk, then place drill which requires to be tested with the center hole in its shank upon the point of the short arm. If the drill be now inclined towards the long arm, the cutting edges may be made to scribe lines across the chalk surface. When the lines from the two edges coincide, and show only one mark for the two edges, the drill will be found to be ready for use.

### ABOUT HEARSES

That the motor hearse has not as yet become a material competitor against the horse-drawn vehicle is reflected in the unusual business just booked by L. Glesenkamp Sons, of Pittsburgh, Pa.

This concern has just received orders for fifteen horse-drawn hearses. The concern is now engaged in the construction of what might be termed a funeral "carry-all." This vehicle will carry the casket and permit room for 32 passengers. It is an automobile car being constructed for a Pittsburgh undertaker.

### BODY MAKERS' TOOLS

These are made in the best manner and in the greatest variety by A. Ochsner & Sons Co., of New Haven, Conn. Only the best material is used because the tools have to sustain a daily reputation for goodness, and it needs good work and good raw material to do that. We suggest body makers to get the latest issued catalogue of body makers' tools. It will be sent freely.

There is in compilation a new catalogue of locks, hinges, and accessories. It will be ready about the time this notice passes under the eyes of readers.

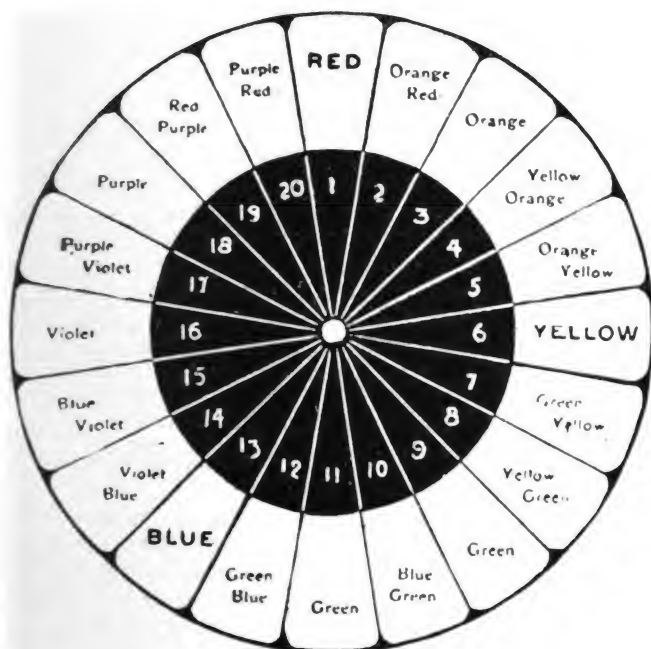
### HOOPES BROS. & DARLINGTON

This old established and noted firm of wheel makers with as many medals for good work as an ambassador has for doing nothing, is the kind of house that should always be kept on the pad. Good wheels are not found today at every cross roads. If the stock is the best, even, the wheel is not necessarily good. To be so it needs long years of practice by the same men doing the one thing all the time the best they know how. It needs just such conditions to produce good wheels.

# Paint Shop.

## COLOR CHART

This chart gives us a reliable guide, says C. S. J., in Australian Coachbuilder, by which correct color harmonies may be obtained. Certain rules governing all color combinations are recognized by artists, and work must be based on these rules. To understand those the chart will enable the painter to grasp what is laid down as correct color harmonies. The primary colors—red, yellow, blue—all harmonize with each other in their varied shades. By mixing any two of these



primary colors we get what is called secondary colors, and the result is the following:

Primary.	Secondary.	Harmonizing Color.
Red—Blue.	Purple.	Yellow.
Red—Yellow	Orange.	Blue.
Blue—Yellow	Green.	Red.

From the above it will be seen that the primary color that is not used in producing a secondary color becomes the correct harmonizing color to use. Thus red and blue produce a purple, and it follows that yellow on purple is correct taste.

We now pass on from the secondary to what are known as tertiary colors, which are produced by mixing any two of the secondary colors as follows:

Secondary.	Tertiary	Harmonizer.
Purple—Orange.	Russet.	Green.
Purple—Green.	Olive.	Orange.
Orange—Green.	Citron.	Purple.

From this we see that the same rule is carried out to produce the harmonizing colors. That secondary color that is not used to make the tertiary color becomes the harmonizer. We take purple and green to produce olive, so orange harmonizes correctly. By various mixtures of any of the above colors there is hardly any limit to the number of different shades or tints one may produce; but this does not say we are to mix all of them together, as in such a case you do not get a color at all. A correct choice of colors must be followed as shown to get any desired shade. Red and blue will produce purple;

but red, blue, and the third primary will only give an apology for a color.

All correct colors must be produced on a strict technical basis. Looking at this chart enables one to get correct harmony with little trouble. At the top we have red, and on looking at the bottom we have green. What looks richer than red lines on a green ground; but just here is where brains must be used in conjunction with the chart. We say red lines on a green ground is harmony of colors. Right; therefore green lines on a red ground should be right also. It is technically right; but it looks weak and disappointing. What the painter has to do is to study the relative positions of any two colors. In painting and lining a vehicle, the predominating or most aggressive color of the two should occupy less given space, with perhaps two exceptions. Those would be in the case of a red or yellow running parts; these would have a black line. In this case the ground is the most prominent; reverse the colors, and the line becomes dominant.

With a red line on a green ground, the colors are evenly balanced; each one helps the other. Reverse the colors, and the green is overshadowed by the red, simply because there is not sufficient green on to balance the two.

In following out any color combination, both the size and class of work in hand must be taken into consideration. A color scheme for a large room would not be applicable to a buggy or motor car.

On the right of chart we find yellow; directly opposite we have violet, and although this will harmonize well in most cases, the seasoned coach painter knows that black would look much better on a buggy. At the bottom, on the left hand, we have blue opposite; at the top we find orange, which will look well almost anywhere.

Grey is a neutral tint, and is very much used for spacing off panels of different colors for interior decorating. On large surfaces, such as business wagons or motor cars, it is very much in evidence.

Both gold and silver are neutral, and although they may appear to better advantage on dark grounds, still they are strictly correct when used on any colored ground.

## ACTION OF DRIERS

Drier, as generally understood by the master painter, is a liquid which when added to linseed oil, or to paint in which linseed oil is an ingredient, assists it to dry or harden in less time than it would harden or dry naturally. It is a well known fact that most oil paints will harden of themselves; but as it is impractical to allow the time usually required to accomplish this, we turn to some agent that will hasten the result. This naturally leads us to inquire what drying is and how it is accomplished.

Drying in paints is oxidation of the linseed oil, and is accomplished by the absorption of oxygen from the atmosphere. This process is practically slow combustion of the linseed oil and gives support to the common expression that too much drier "burns up" the paint.

It would be well for the paint if this process of oxidation would stop when the paint has hardened, but unfortunately it does not. It continues on, although more slowly, until in course of time the oil is completely oxidized or consumed. This is owing to the fact that the paint film is absorbent and permits the entrance of oxygen, which attacks the oil through the mediumship of the drying agents present.

It is interesting to note that a very large amount of oxygen



is absorbed. It has been found in some cases that as high as eighteen per cent. increase in weight and a very noticeable increase in the thickness of the paint film takes place in the process of drying.

Certain minerals or their oxides and salts have the power or property of absorbing oxygen very rapidly. On the other hand, other excellent drying agents do not become active till brought into contact with linseed oil, and then do not yield up their oxidizing properties till heated to high temperatures while cooked with oil or with resins.

The method usually employed to extract the drying properties from these mineral salts and prepare them for introduction into paint in the form of liquid drier is as follows:

They are first finely ground into powder, and then cooked with linseed oil or varnish gums for several hours, reaching a temperature ranging from 450 to 600 degrees Fahrenheit, until they unite so that a few drops will form a jelly-like mass, known as the "pill." Then it is allowed to cool to a temperature of about 200 degrees when it is thinned with turpentine or naphtha, or both, when it becomes the thing we know as driers.

When varnish gums are employed the drier is known as a japan drier, but when no gum is used as an oil drier.

Drier is made for many purposes. The varnish maker requires several different kinds, because the same drier will not produce the same results in all kinds of combinations. The paint manufacturer also has to employ various kinds of driers for the same reason. He has spent thousands of dollars and years of time in careful research work to ascertain what is best for certain pigments, and very careful formulas have been worked out as the result of hundreds of experiments.

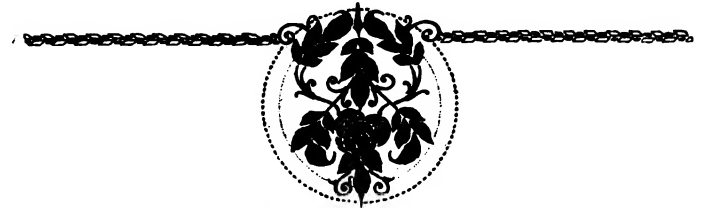
For instance, it has been found that, although a drier made with acetate of lead is very pale in color, it can not be used in combination with some pigments, because of chemical action causing discoloration. Besides the acetate of lead and the oxide of manganese already referred to, litharge, red lead, borate of manganese, and several other salts of manganese and Prussian and Chinese blue are used either alone or in combination.

We find upon the market a vast variety of liquid driers, ranging in price from about twenty-five cents per gallon by the barrel to three dollars and a half per gallon in gallon cans, and variously known as brown japan, white japan, coach japan, gold-size japan, carriagemakers' japan, lightning driers, japan driers, oil driers, union drier, and by a large number of proprietary names.

The cheaper japans contain rosin and rosin oil. The high-grade japans contain good qualities of hard varnish gum, and differ very slightly from varnish in their structure, except for

There are the lead-oil driers, and the lead-japan driers, the lead-manganese oil and the lead-manganese-japan drier. Red lead used as a drier produces a different kind of effect on the paint than does litharge; the latter is thought to produce a more elastic film than the former, but both have their uses. Manganese oxide is a much more rapid drier than the lead oxides, while manganese borate produces a much paler drier than either.

It has been ascertained that the best proportion of lead and manganese oxides when they are used in combination is in the ratio of twenty-five parts of lead oxide to one part of manganese oxide. A combination of lead and manganese produces a drier that has advantages over either alone, and if made up as a japan drier it sets up more rapidly than if made up as an



oil drier. In a carefully conducted test, lead-oil high temperature drier dried on glass by itself in twenty-four hours; a lead-manganese high temperature oil drier dried in six hours; a lead-manganese japan drier dried in two hours; while a manganese-rosin drier dried in thirty minutes. We see by this that the method of testing drier by putting it on glass and timing is very misleading, unless of drier we are testing.

Upon the composition of drier depends its value for the purpose used, and that which accomplishes the results with the least injury to the durability of the paint is the most desirable to use.

### VARNISH ROOM WISDOM

It is customary when sweeping a floor to sprinkle it with water, but bitter experience has taught me that this is next to useless. The water only tends to drive the dust into the grain and cracks in the flooring, and as soon as it evaporates, leaves an accumulation of grit behind, which, when trod on, grinds into fine dust that is rapidly scattered by the movement of the workmen.

The safest, cleanest and most effective aid to sweeping is a few handfuls of dampened sawdust, or a small touch of patent sweeping compound.

The matter of clean brushes and the keeping clean of brushes is one that deserves to be well discussed. If you take a dirty brush and squeeze it out in turpentine, you do not wash the grit from the brush, you only wash out a certain quantity of it. The balance drifts up into the stock of the brush, and when you come to put it on to a first class varnishing job that grit gradually works down through the bristles of the brush, distributing itself over the surface of the work, marring the work to a great extent, and causes an appearance as if some one had taken a handful of dust from the floor and thrown it on the varnish.

Let us study this by no means new device for keeping brushes in good trim. A device that is simple but very effective. Here we have an ordinary twenty-five pound lead iron with a piece of wire soldered firmly on to the side, and bent about three inches above and across the top of the iron. By drilling small holes in the handles of the brushes they can be swung clear off the bottom of the pot. Not only does this device preserve the shapeliness of the brush, but it also prevents the overcrowding of brushes in the pot—a practice that is conducive to results to brushes in the shape of twisted and scattered bristles.

In the winter time, with the thermometer reading anything from zero to forty below, varnish is almost bound to get into the condition known as chilled, either in stock or in trans-



the larger percentage of drying agents they contain. In this class are to be found coach and carriage makers' japan.

It is possible to make drier in so many ways that it would be tiresome to attempt to describe them; we will, therefore, confine ourselves to a description of those in most general use.

ference to the job. Varnish in this condition is full of tiny specks, known as chilled specks, and these very often completely mar what would otherwise have been a good clean surface. The best safeguard against this trouble is either to place the varnish tin on top or near a register or radiator, or to place it in a vessel containing hot water for some time, when the varnish will resume its normal condition.

There is also one point you might take note of when you are opening a tin of varnish, to leave it open for ten minutes to a quarter of an hour before you start varnishing. There are certain gases which accumulate in your varnish tins, which, if they get on to the surface of your work, will sometimes at least help to mar the surface. They certainly will not help to



improve it any way. Almost any varnish possesses flowing quality of some kind or other, but the very best varnish on the market, if scraped out by and dug into with the brush, will fail to find a level surface.

In the hand of a first class mechanic, the sound made by a varnish brush as it travels over the surface is scarcely audible. Varnish flowed gently in this manner requires less cross brushing and laying off for the purpose of removing froth or air bubbles. Hanging on varnish in a manner suggestive of a carpenter driving nails, no doubt gives people the impression that the mechanic is a very busy man—busy destroying the lustre of the varnish.

### DOING UP GEARS AND CHASSIS

W. A. Riggleman, in the *American Blacksmith*, has some repainting and varnishing suggestions to offer based on his shop practice. The time has come when the doing up of motor gears and bodies is a part of the business of the carriage shop, or the carriage painter, so we are presenting all the practical suggestions bearing on the subject we can find.

All wheels and wood parts to gears and chassis are supposed to be primed when they come into the paint shop. New wheel axle caps should be sandpapered well before priming, and if wood spring bars are used they also should be sandpapered and primed. All springs should be taken apart or loosened so that they can be sandpapered well and leaded between the flat parts or, in fact, all over. Use a lead with a little oil in it for springs, as springs when they come from the factory have a coating on them that is dangerous to paint over, and this



method stops the rust from coming out on the edges and causing the paint to scale off after the blacksmith has ironed the gears.

A quick way to do gears is to putty right on this priming, and you can sandpaper all you please. After sandpapering, dust well and give the gear a coat of dark lead with a little oil in it. Put this coat on with a camel's hair brush so you can get on a good heavy coat. Now moss or hair this coat. Next give the gear a coat of color the same as you wish it finally to be, a coat of color varnish, stripe and finish. This is the old quick way and a good one. What is the use of giving this new gear a coat of lead on top of the priming and

then puttying and sandpapering it all off and then giving it another coat of lead? The way I have just explained saves one sanding and one coat of lead. Thus time and stock is saved and your job is just as good.

Here is something to remember: Always have the blacksmith do all his drilling with linseed oil on anything that has to be painted. Then you will have no trouble with grease on your wheels and gears. Old gears at the present time are not in very bad condition unless you strike some old time job that has been painted several times. You will have to sandpaper an old gear down good with a No. 2 sandpaper which puts it in pretty good shape. After you have finished sandpapering, give the gear a coat of dark lead mixed with keg white lead, dry lamp black, a small amount of japan and oil well mixed and thinned with turpentine. Put on with camel's hair brush. When dry, putty very little and sandpaper those spots. Moss the rest of the gear. As you sandpaper a wheel or the gear part or shafts, dust and touch up the putty spots with the color the gear is to be. When you have sandpapered, give the gear or chassis a coat of color on the putty spots so that they will not show and, finally, color varnish, stripe and finish. This is a quick way to do this work. Use a good gear and body finishing varnish.

### ONE WAY TO PAINT A NEW VEHICLE

This way I speak of will do for any vehicle that runs on wheels or flies, for flying ships have wheels. I will speak of



the body and seat first. If body and seat have been made in the shop you work in, you will find same sanded good. If you work on same at once, prime or fill, but if bodies have been shipped you will find grain has raised and will need a good sandpapering. Then get some good wood filler; lots of good firms make this filler; no lead. Put filler on with a stiff bristle brush, let stand a few minutes, then wipe body off with a rag. Next day this body will do to putty, and, if hurried, work putty and turn right around and give same a coat of rough stuff. Use the kind that has plenty of lead. Some firms make it straight with no lead in it. Then give a coat each day; five coats will do; if they are rushed put on two coats each day; stand overnight or one day, then you can rub same. Then give body a coat of drop black, if you have the time, if not, give same a coat of solid covering color varnish; some of this will stand a rub next day, then finish on this coat. This can be done in a week or ten days, but use good body finishing. All cheap shops finish on one coat of black rubbing varnish; all big shops have plenty of room and lay all light jobs on their sides to coat. In that way they get on a heavy coat, and it looks pretty good; it will not stand long. If body is started with the old lead system and oil, use a wood filler.



This applies to small country shops, too, for they must be fast, as well.

Wheels and gear should be filled with a wood filler as soon as they come into shop. Always sandpaper wheels, gears, shafts good before being filled. Then after you get the ironed gear into shop, putty after dry, give a coat of dead lead mixed with white keg lead colored with lamp black, a little japan and just enough oil to keep it from setting. If gear is to be any other color, tint lead same color, then moss off and give a coat of the system; strong color varnish, then make any color you wish, then moss this off and stripe, then finish.

You will have a fair looking job and one that will stand, and gotten out in gig time. As to stock, always consult your painter. If his way does not do let him try another system. You never get too old to learn, but you will find some foremen painters whom no one on earth could tell anything, so set are they in their ways. W. A. RIGGLEMAN.

### AVOID INJURY TO FILLER

When removing old varnish from hardwood, do not get down into the filler. To avoid doing so, scrape away the old coating as soon as softened and at once wash up with alcohol and a rag. It is hard to prevent the remover from working on the filled but it will injure the finish if it remains there. When it does get into the filler, it will be found better to apply more remover and remove all the filler, then refill.

### PROFESSIONAL TREATMENT FOR METAL BODIES

The first step is to clean up the body of the car thoroughly, whipping the grease off with a tuft of cotton waste saturated with one part crude oil and two parts turpentine. Then run over the surface, if considerable varnish gloss remains upon it, with a roll of broadcloth moistened with water and dipped in pulverized pumice stone.

Then whip some mineral paint in one part raw linseed oil and three parts turpentine to a rather heavy paint consistency, and with this mixture touch over all the shattered bits of surface which have become bare right down to the metal. Parts scraped and partly worn off, but as yet not ground down or splintered off to the metal, should be touched up with the same mineral pigment thinned with one part raw linseed oil and six parts turpentine.

Let this pigment harden completely, after which fill up the cavities or depressions with hard-drying putty, bringing the putty up a little higher than the surrounding surface, thus allowing for possible shrinkage and giving a chance for rubbing the spot down perfectly level with the general surface. Give the putty forty-eight hours to dry, whereupon proceed with a block of artificial rubbing stone dipped in turpentine, or, if the insurance regulations permit, in gasoline, to scour these putty patches down to a perfect and smooth level with the surrounding surface. Avoid using water for the purpose of rubbing, for in case the surface is cut up with varnish fissures, the moisture will penetrate them, and open them up. In case the surface is to be brought to a finish at the least possible expense, touch the putty patches, after rubbing, with a bit of body color, and next over the entire surface flow a coat of varnish color, using enough varnish to cast a good gloss into the mixture.

When this coat is dry rub it rather lightly down with water and pulverized pumice stone, wash up very clean and good, put on the necessary striping, if any, pencil varnish the stripes and flow on a coat of heavy body finishing varnish.

In the event of making a better finish, instead of using the varnish color first, thin down some japan ground body color with turpentine, and to every eight parts turpentine use one part raw linseed oil. Then put the varnish color directly over this. Rub this coat when dry with water and pulverized pumice

stone, wash up and apply whatever striping may be desired. Next, over this flow a coat of elastic rubbing varnish, which should be given anywhere from four to six days to dry. Rub, as before, with the water and pulverized pumice stone and finish with a high-grade elastic finishing varnish.

Whenever a metal surface comes in with the paint scaling and flaking, due to old age, rather than to service, abuse, or to accident or to a wrong system of building up the finish, the only remedy worth while is to use a hook steel scraper, and with it remove every part of the shaky material. Old paint foundations, to be worth painting over, must be sound to the core; otherwise, burn or tear them off.—Cooper's Vehicle Journal.

### METAL STENCILING

Stenciling in metals can be done either with the powder or the leaf. When the metal is to be applied in the leaf form, the surface to be decorated must be stenciled with some adhesive medium and allowed to dry till just "tacky" enough for the metal to cling to it. Quick-drying japan gold size is dry enough in from half an hour to two hours: it admits of no delay when it has reached the right degree of "tack," as it hardens to a varnish-like surface on which the metal will not stick. Slow drying oil gold size remains sufficiently tacky for a week, though it may be gilded over after twenty-four hours.

If the metal is applied while the gold size is too wet it turns black looking. The sizing should feel tacky, but should not admit of being smeared or moved by the fingers. It should be evenly and thinly distributed over the surface. When it has dried to the right consistency, the portions of metal leaf are laid on approximately the right size and shape, and patted well down with a soft dabber—a wad of cotton is the best. When the metal has set quite firm the loose edges are wiped off. Gold, silver, platinum, aluminum, and various alloys known as Dutch metal, bronze, etc., can be applied over size in this way. Silver and metals that oxidize must not be used on an oil size, as the oil oxidizes and so hastens the darkening of the metal. Japanese gold size is the best in such cases.

### STENCILING HINTS

For stenciling on a painted surface, the colors must be ground in oil. For small work decorators' oil colors in tubes are convenient; these must be thinned down to the consistency of thick cream with three parts turpentine to one part quick-drying japan gold size. In small amounts, it is difficult to give exact quantities, a few drops of the size may be enough, too much makes the paint dry stiff on the palette and look shiny when applied. For mixing on a large scale, white lead ground in oil, tinted with powder colors ground in oil, takes the place of tube colors, and must be thinned down for use with turpentine and gold size. These last are not added until the color is wanted to work with, as they evaporate, leaving the paint stiff and sticky. No color must be added dry, as it is sure to show up streaky in using.

In using oil-paint, the brush must not be plunged into the bulk of the color; the best plan is to dip portions of color out on to a palette (a sheet of glass is good), and charge the brush from that.

### LEAD POISONING AMONG PAINTERS

The information available in Great Britain shows that painters stand at the head of the list of trades having a large amount of lead poisoning. Among house painters and plumbers 383 deaths from lead poisoning were reported during the past ten years. The special dangers among painters are in the dust caused in sandpapering lead-painted surfaces, dust from mixing white lead with oil, dust from paint which dries upon the overalls of the painters, absorption of lead from

eating with unwashed hands, and in the fumes evolved in burning off old paint.

Aside from the deaths reported as directly due to lead poisoning, an excessive mortality has also been noted among house painters from diseases of the heart and blood vessels, kidney disorders, and tuberculosis, which are directly and indirectly associated with lead poisoning.

Because the prophylactic measures employed for the protection of painters have not given satisfactory results, and because the danger in the use of lead paints is so generally recognized, several nonpoisonous substitutes have been recommended and have found more or less acceptance in European countries.

In France, at the end of five years, the use of white lead will be prohibited in all painting, both in the interior and on the exterior of buildings. In Austria and in several of the Swiss Cantons the use of white lead is forbidden in interior decoration. In several other continental countries steps have been taken toward the prohibition of the use of lead in interior painting.

### DROP BLACK

We often find manufacturers use the word "Ivory" in connection with drop black. This is misleading, as there is no ivory drop black today. In the first production of drop black, ivory was burned, but in the progress of events bone was substituted. This color is used as a solid or to produce a jet black coating. The requisite is density or depth of color, covering properties and fineness. Tinting strength is not considered for the reason that it should not be used as a tinting color. In other words, drop black is used where lamp black should not be used, for the reasons stated.

### LAMP BLACK

This is the king of all colors. It is the most durable, having more wearing qualities, and a greater tinting range than any color in the paint shop. One pound of lamp black in oil, mixed with ten pounds of white pigment, will carry the white farther away from its original color than can any other tinting color.

The requisites of a good lamp black first is strength, then tinting tone, as it must produce in the tint a bluish slate tint, and not a gray, in which latter event a muddy gray would be the result.

Lamp black is the slowest drying color, being a lazy oxidizer, and for this reason as well as its color, should never be used by itself.

Genuine lamp black in oil, as taken from the can, is not a jet black, and if spread under the brush in the solid, and not as a tinter, is not a dense but a gray black.

### BENEFIT OF BANANA LIQUID

Banana liquid has a very objectionable smell but it is not harmful to the hands or the brush and it acts well on the old varnish. Neither does it injuriously affect the wood. It eats right down to the wood and is hard to stop short of that point, once it gets started, so that for merely taking off the upper surface something less energetic should be used. Banana liquid and alcohol mixed makes a good one for that purpose.

### HOW TO PRESERVE PAINT OR PAINT BRUSHES

Take two tin cans, unsolder their cut ends and smooth the end while warm; then swell one so it will go over the other for one-fourth or a half inch, then place the paint or brushes with a little water in the swelled can and jam the other can in onto the swelled can; then fill the joint with oil. Soft oil is best, such as machine oil, as it will not stick the cans. This will make an absolutely air-tight joint.

### UMBERS AND SIENNAS

These colors are used to produce what the artists term "warm tints." A greater variety of soft, clear and deep tints can be produced with the use of umbers and siennas with white, than any combinations of colors known in the tinting arts. Strength in these colors has no influence with the critical user.

Umbers and siennas are products of old mother earth, and the finest grades are mined in Turkey and Italy, and no process is used to make them ready for the grinder other than calcining and grinding.

There is a demand for strong tinting umbers and siennas; then richness of tone and brilliancy of color are sacrificed, and artificial means adopted for strength.

### REMOVING PAINT

Stone lime, 3 ozs., pearl ash or salaratus, 1.02. Directions: Slack the lime with water and mix in the pearl ash or salaratus, using only water enough to make a paste. Spread this upon the paint to be removed and let it remain over night or until soft, when it can all be scraped off. Where pearl ash cannot be obtained use sal soda or salaratus.

### GOOD PUTTY

In recent years there has been great improvement effected in the manufacture of this essential to a painter's art, and it has been proved conclusively that although the manufacturer may make his putty from pure whiting and pure linseed oil, yet, unless pains are taken to effect a perfect amalgamation of the two materials bad results may accrue. Still more important is the necessity for avoiding the presence of moisture. The whiting has a natural affinity for moisture and absorbs it greedily on exposure, so that the up-to-date manufacturer arranges matters in such a way that the whiting is discharged into the mill with the oil without any delay at all. In this way it is ground while quite dry and there is no question about the fact that the durability of such putty is immensely enhanced in consequence.

### KELLY-SPRINGFIELD REPORT

The Consolidated Rubber Tire Co., maker of the Kelly-Springfield tire, had net earnings of \$114,020 for the year ending December 31, 1911, according to a report recently made. This was an increase of \$28,505 over the previous year. The gross sales for 1911 were \$3,383,532, as against \$2,160,915 for 1910. The income account for the two years is shown by comparison as follows:

	1911	1910
Gross sales .....	\$3,383,532	\$2,160,915
Interest, divs. receivable.....	95,562	150,402
Total receipts .....	\$3,479,094	\$2,311,317
Expenses, taxes, etc.....	3,365,074	2,225,802
Net earnings .....	\$114,020	\$85,515

### GOODRICH DEAL GOES THROUGH

The plan to increase the capital stock of the B. F. Goodrich Co. to \$45,000,000 went through at a meeting of the stockholders. There was 98½ per cent. of the common stock present and 95½ per cent. of the preferred. The vote was unanimous. One of the stockholders said: "We will retire one-third of the preferred stock per year and will not pay more than 125 per cent. when it is taken off the market."

## WOOL AND LEATHER GREASE

Wool grease and degreas (also called tanning or leather grease), which are often more or less confounded in the United States, are two quite different products, and are described at length by Consul General Frank D. Hill, Frankfort on the Main.

Degras is, properly speaking, the fat obtained in tanning chamois leather and consists of oxidized oil. The degreas is taken from the leather with a knife and the leather is washed with a solution of soda or potash. The mixture so prepared is decomposed with sulphuric acid. A purer form of degreas is obtained by a French method and sold as "moellon." This process is to tan the leather for a shorter time than is usual in white dressing and to press the oxidized oil from the leather under water at high pressure. As the demand for degreas is greater than the supply, there are tanneries in which inferior skins are subjected to repeated chamois dressing with the sole object of obtaining degreas.

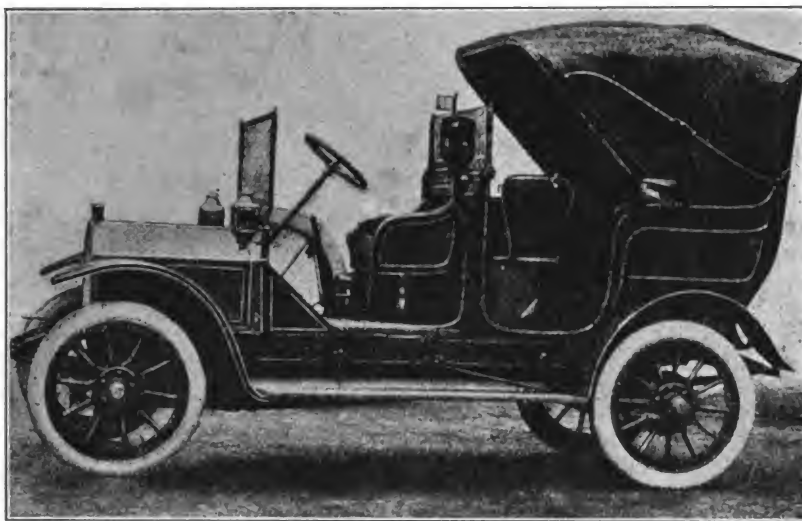
So-called artificial degreas is a mixture of chamois-moellon and artificially oxidized oil; frequently also moellon is not used and the product is obtained from oxidized oil, oleic acid, talc, etc.

German patent No. 149,822, covering a process of manufac-

## PLANNING A COST SYSTEM

In planning a cost system for your factory make the system as simple as you possibly can, so that every foreman and employe will readily understand it. Although excellent systems, both complex and simple, have become general in the United States, yet many cost systems are so complex that, with the multiplicity of details, their real purpose is almost lost. Besides, they add an enormous expense to the product. Employes do not want to be antagonized with complicated systems. The man who puts in a cost system must have plenty of experience in a practical way, as well as theoretical knowledge of accounting. Unless he has full knowledge of all details of the business, it would be better not to install the system.

The basis of a sound cost system is accuracy in bookkeeping, a correct inventory and exact data for the cost clerks. Another thing in favor of a good cost system is that it has for its main object the determination of the efficiency of men. The system should tell you daily what each man has accomplished, who are your good men and who are your lazy men. It shows you whom to discharge and whom to promote. It also tells you whose wages are too high and whose wages are not high enough. You will learn what men to appreciate, as every man well hired is an investment for your company. Give your



New Type of Taxi—A Victoria Cab

ture of degreas and similar products, is based on the oxidizing action of ferments on oils. A culture of denitrifying bacteria (cheese bacteria) is mixed with oil, a solution of saltpeter, and nutrient media, the whole well aerated, and finally the oil washed out. The oil is then strongly acid and of much greater consistency and can be used as degreas. Degreas is used chiefly in tanneries and leather factories for preserving leather. It costs here about five cents a pound.

Wool grease is obtained by soaking the raw wool in water and washing with soap and carbonates of alkalis. The water is then passed into a centrifugal apparatus which removes the grease from the soapsuds.

Sometimes the fat is removed from the wool by extraction with petroleum spirit, ether, or carbon disulphide. The product obtained is a greasy substance with a disagreeable odor and a color varying from brown to yellow.

Purified wool fat, known under the name of "lanolin," is a product of considerable importance. The raw material is purified by different methods. The impurities can be extracted by means of boiling acetone, or the fat may be treated with benzene or some other fat solvent, after which the purified fat is obtained by distilling the solution.

employes a square deal and you will protect yourself against strikes. When a man "does not make good," either discharge him or try him in some other department.

When you install your cost system make your superintendent and men see the new ideas. Many employes are never glad to see changes. Explain to them what benefits are derived from such a change, and that they are also benefited thereby. Consider your men and handle them diplomatically. Unless your employes co-operate with you, it is useless to consider such a system.

## ADHESIVES

The Indianapolis Paste Co. says: "The process of making paste is an art that requires years of practical experience to master." This is true, and this company fills the bill. The "Stickstay" cold water paste is the kind trimmers need, and it comes dry. Add the necessary water in the shop, and don't pay freight on water as in the old barrel of paste way. If you want wet paste, get the "A" grade made by the company and you will get something good.

## TO EXPLOIT TRADE WITH AN EXHIBITS SHIP FILLED WITH SAMPLES

Plans are announced of a nation-wide movement for the extension of American trade in Latin-America. An ocean liner, fitted out with exhibits of finished products manufactured in this country, will be sent as a trade missionary into every important port of the West Indies, Central and South America.

Behind this scheme are the leading exporters.

President Taft and the Departments of State and Commerce and Labor have indorsed the move and have promised all the official courtesies that the extraordinary expedition may enjoy. The State Department has gone so far as to prepare instructions to all American diplomatic and consular officers along the route to arrange for an appropriate reception to the traders.

In a letter to Henry T. Wills, Secretary of the American Manufacturers' Export Association, the President expresses his approval.

The diplomatic representatives in Washington of the republics of Central and South America have extended in advance a cordial welcome to the exhibit ship.

This vessel will sail from New York as soon as the exhibits can be installed and the preliminary arrangements can be made, for a cruise extending over a period of six months. West Indian trade centers will be visited first. Afterward the ports on the east coast of Central and South America will be touched, after which the ship will round the Horn and begin the commercial exploration of the west coast of South America. Two months or more will, therefore, be devoted to the cultivation of friendly trade relations with the countries of the Pacific.

If, after the floating exposition reaches the west coast of the United States, the manufacturers find that the results have stimulated the exchange of trade that is now looked for, the vessel will sail for the Orient and the exhibits will be taken to the very door of the Oriental consumer.

Before the ship sails advance notices will be sent to all ports to be included in the itinerary; local newspapers will be advertised in and excursions will be run from interior points to the coast cities to be visited.

## EXPRESS RATES ON NEW SYSTEM

The Joint Committee appointed by the Interstate Commerce Commission to consider and report upon certain details of express operation, met at Washington and considered the subjects of identification labels and a proposed system of zones suggested as a basis for the formulation of express rates.

The practice hitherto prevailing has been to govern the movement of shipments and the collection of charges by waybills intended to accompany the shipment. In practice these waybills are frequently delayed and shipment is received at point of delivery without other information than that upon the parcel itself. Despite the fact that many shipments thus arriving without waybills are marked "prepaid," the delivery agent, in the absence of a waybill, requires payment by the consignee in order to protect himself in case the waybill when received is found to differ from the prepaid mark on the package. This is a fertile source of double collection of charges.

Another harmful result of the separation of waybills from shipments is the lack of means for identifying the latter in case the marks thereon are insufficient.

The Joint Conference Committee has devised a form of label intended to remedy these defects. By the use of manifolding, a label containing all the information contained in the waybill is prepared by the express company's billing clerk when the waybill is written, and such a label is to be pasted upon every shipment. This label will show the name and address of the consignor, the name and address of the consignee, the routing,

date, amount of charges, number of packages, and every other similar detail affecting the movement of the package or the accounting and record necessary to locate it. A green label will be used for prepaid packages and a white label for collect packages. By this method the delays and errors hitherto incident to the separation of waybills from packages and to insufficient marking upon packages will be done away with, and the double collection of charges will likewise be abolished.

The plan proposed will not interfere with the use by merchants of their own labels, but will supplant the latter by an official label of the express company which will completely and fully govern its movement and provide for its identification at any time and place.

The Commission has now under immediate consideration the question of formulating a new system of express rates, and as a basis therefor a block system has been devised and applied to the entire United States. The blocks are of nearly uniform size, about fifty miles square, and are so arranged in east and west and north and south zones that the approximate location of any zone is immediately indicated by its number. There are about 900 blocks and these embrace the entire area of the United States.

Although no statement has yet been made by the Commission as to its probable action in the matter of rates, it has under consideration a scheme which will involve a uniform charge per hundred pounds for shipment between any points within the limits of a specific block, this base charge to comprise a proper amount for terminal service, plus a moderate transportation charge. Upon shipments which pass into other blocks a uniform additional transportation charge will be levied for each block through which the shipment passes.

As to graduate charges for shipments of less than 100 pounds, the plan of adopting multiples of the base rate and the weight has been suggested, although no definite conclusion in regard thereto has been reached.

With this simplification most of the errors in charges that are now so frequent, largely because of the inability of express agents in small towns to understand the present scheme of charges, will disappear.

It should be understood that the work of the Joint Conference Committee described above is not conclusive, but has been submitted by direction of the Commission for its consideration, and as expressive of the views of both express companies and shippers.

## FACTORS IN FOREIGN TRADE

The Bureau of Manufactures now has in press a bulletin that will no doubt find a permanent place on the desk of every manufacturer interested in foreign trade. In its 56 pages will be found answers to questions asked by every manufacturer sending out trade literature or opening correspondence with foreign firms: What language is it best to use? In what currency and what weights and measures should prices be quoted? What postage should be placed on the catalogue or the letter? Can I prepay a reply from the prospective customer? Is there a parcels post?

The bulletin answers these and other questions for each country in a concise manner, the reader can put his finger on the information sought without hunting through a mass of detail that he does not want. Supplementing these statements are tables for converting the money of foreign countries into that of the United States; also a comparison of prices for countries in which both the monetary unit and the units of weight and measure differ from those used in the United States. For example, the latter tables show the reader at a glance what is the comparative price per meter in Mexican currency of a cloth quoted at 50 cents per yard in United States currency; or the price per pound in United States money of an article quoted at 30 francs per kilo in French currency.

Currency conversion table and price comparisons are given

for over 30 countries. Foreign postage rates and the parcels post regulations are summarized, and a list is given of the countries in which international reply coupons are valid.

Copies of the bulletin which is entitled, "Factors in Foreign Trade," will be available for distribution at an early date, and those desiring it should make application to the Bureau of Manufactures, Department of Commerce and Labor.

### 1912 STATE FAIR DATES

The American Association of Fairs and Expositions recently met in Chicago, and the following dates for 1912 are announced. The date indicates the first Monday on which the fair will be held:

- March 18—Pacific Northwest Live Stock Show, Portland.
- August 26—Iowa State Fair, Des Moines.
- August 26—Ohio State Fair, Columbus.
- September 2—Minnesota State Fair, Hamline.
- September 2—Nebraska State Fair, Lincoln.
- September 2—Indiana State Fair, Indianapolis.
- September 2—California State Fair, Sacramento.
- September 9—South Dakota State Fair, Huron.
- September 9—Wisconsin State Fair, Milwaukee.
- September 9—Kansas State Fair, Topeka.
- September 9—Kentucky State Fair, Louisville.
- September 9—West Michigan State Fair, Grand Rapids.
- September 9—New York State Fair, Syracuse.
- September 9—Oregon State Fair, Salem.
- September 9—Colorado Interstate Fair and Exposition, Denver.
- September 16—Interstate Live Stock Fair Association, Sioux City, Iowa.
- September 16—Michigan State Fair, Detroit.
- September 16—Central Kansas Fair Association, Hutchinson.
- September 16—Tennessee State Fair, Nashville.
- September 16—Vermont State Fair, White River Junction.
- September 16—Colorado State Fair, Pueblo.
- September 23—Interstate Live Stock and Horse Show, St. Joseph, Mo.
- September 23—Tri-State Fair, Memphis, Tenn.
- September 23—Montana State Fair, Helena.
- September 23—Oklahoma State Fair, Oklahoma.
- September 30—Interstate Fair, Spokane, Wash.
- September 30—Oklahoma State Fair, Oklahoma City.
- September 30—Missouri State Fair, Sedalia.
- September 30—Utah State Fair, Salt Lake City.
- September 30—Interstate Fair, Trenton, N. J.
- October 7—American Royal Live Stock Show, Kansas City, Mo.
- October 7—Illinois State Fair, Springfield.
- October 7—Muskogee Fair Association, Muskogee, Oklahoma.
- October 14—Northwestern Live Stock Association, South St. Paul, Minn.
- October 14—Texas State Fair, Dallas.
- October 28—Louisiana State Fair, Shreveport.

### WHERE WE EXPORT

If anyone wishes to know where American standardized cars are sold, and how the business is progressing, a glance at the subjoined table will give the information:

	No. of cars
Canada .....	3,724
United Kingdom .....	1,875
British Oceania .....	938
South America .....	444
Asia and other Oceania.....	477
France .....	273
Italy .....	137
Germany .....	73
Other Europe .....	508

### THE LAST "GENERAL" HORSED BUS

The disappearance of the last horse of a stud which comprised nearly 18,000 animals but a few years ago must, without doubt, be regarded as an epoch-marking event. The last horse belonging to the London General Omnibus Co., on October 25, 1911, was turned out from the service of the company. This stupendous alteration has been caused entirely by the supersession of the horse by the motor vehicle for the purposes of the business of London's omnibus company.

Londoners have been surfeited with articles in the daily press dealing with the disappearance of the last horse bus. They have been left with the impression that the old-time vehicle had disappeared entirely from London's streets. This is not the case: the pirate bus thrives in increasing hordes, and its driver and conductor seem to make by no means a bad thing of it. Skillfully wedged in between the regular "times" of the big motorbus routes, the pirate has little difficulty in picking up a visitor who does not know the ropes sufficiently, as well as the nervous old lady who never will be persuaded to go in a motor-driven vehicle.

In addition to these irregular free lance services, there still survive one or two of the old established horse bus proprietary companies. Tillings and the "Associated," for instance, still run a large number of horsed buses, and, indeed, the last batch of "General" vehicles of this sort was turned over to the Associated Co., which will run them on the route that they were serving when the final dissolution came. London is not yet totally freed from the horsed bus, but its biggest omnibus company has now definitely no horse in its stables. And this is the state of affairs which marks an epoch of importance in the history of commercial motor vehicle development.

### MANAGEMENT

In perfecting an organization the individual should be disregarded, and only such men chosen as are best fitted to assume the duties and carry out the purpose of the departments and positions created. The greatest difficulty confronting the organizers is the scarcity of capable men to fill these positions. Our schools are not as yet providing adequate instruction as a preparation for modern superintendents, systematizers who have specialized for certain industries.

Our foreign friends are ahead of this country in industrial education. Many foreign schools have provided departments for the promotion of crafts. These schools also teach up-to-date methods in production, the best machine tools, how to use them, and the best ways of procuring business.

How many buyers will one find today who have the ability of recognizing quality in the goods offered, whether the price is low or high? Good buying does not mean ability to beat men down in prices, simply on general principles; this is mere shrewdness. Good buying goes deeper than that. It is not mere shrewdness; it is knowledge. A good buyer should be thoroughly familiar with all materials he has to purchase. Good buying constitutes one of the most important factors in successful manufacturing. I believe that every buyer of glues, varnishes, oils, etc., should be to some extent a technically trained man, or have at least some knowledge of the chemical and physical properties of the materials he purchases.

To reduce the subject of organization to concrete form, says the Woodworker, the object may be defined as follows: (a) To unite the individuals who are to conduct an enterprise into a body which will work systematically to a common end; (b) to bring together or group the component parts of the body with respect to their specific relations and duties; (c) to elect officers and appoint communities and authorities with clearly defined duties and responsibilities.

These definitions all lead to a common center. Without co-operation the success of any organization is very questionable, if not impossible. With it a body of men, all working together



to a common end, will surmount almost any apparent obstacle. No matter how large an organization may be, how many or wide its ramifications, if the spirit of co-operation prevails, it will move as one irresistible body.

Too little attention has been paid to the development of this spirit of co-operation in the past, but it is now becoming recognized as a great item of economy, confidence and strength from the executive's point of view, and of development and opportunity from that of the employee.

Think of the time lost by an organization in which the individuals are not working together for the success of the business; by slowness of getting the work under way in the morning and after lunch; by some being overcrowded with work, while others are doing little or nothing. Think of the leaks, the waste, and even the serious mistakes that are caused by internal dissension, jealousy and personal ill feeling. Take a volume of business being handled by a force characterized by such a lack of harmony, put it in the hands of an organization that is working in the right spirit, and all the leaks and wastes will at once be converted into savings of time and money.

Business is no longer conducted by the rules and methods used thirty years ago. The chief duty of every manager is to develop the spirit of co-operation.

In the great majority of manufacturing establishments the company officers are far more conversant with the details of financing, accounting and selling than they are with those of manufacturing. From time to time questions of business policy arise which have an intimate connection with cost of production, time of delivery, stock of lumber and other material; unfinished parts, condition of work in process of manufacture, and so on. Of course, these men must depend wholly upon the opinions of superintendents or foremen, these opinions having no firmer foundation than intuition.

The most successful factory organizations are those in which all departments having to do with production in any manner whatever are subordinate and responsible to one general head.

All men have a certain mental inertia, which makes them resist change of methods and habits. Foremen are particularly resistant to change, because of their custom of giving orders more frequently than receiving orders. Hence the production engineer who tries to introduce modern methods is certain to meet with violent opposition from foremen; and the older the foremen, the more violent the opposition. When the production engineer introduces a new method, he must personally attend to every detail or it will in most cases go wrong. The old foremen and workmen do not usually want "new-fangled ideas introduced."

### NEW AUTO COMPANY FOR CINCINNATI

A new company for the manufacture of automobiles and automobile trucks is being organized by Franklin and Harry T. Alter and J. B. Doan in Cincinnati. They have purchased from the Power Car Company all equipment, drawings, patterns, fixtures and material. The new company is to be chartered as the Cincinnati Motors Company, and temporary quarters will be located at 1741 and 1743 Central avenue. Later a manufacturing plant will be built or leased, as it is understood the new concern is abundantly financed.

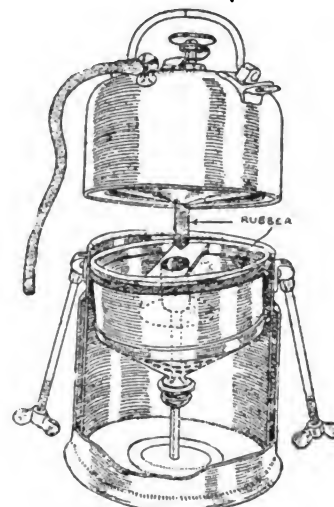
### RECEIVER ASKED FOR PRIMO MOTOR CO.

The Murphy Varnish Company, the Stuart & Clark Manufacturing Company and the Dennison Manufacturing Company on March 28 filed in the Federal Court a petition asking that the Primo Motor Company, of Atlanta, be adjudged in involuntary bankruptcy, and that a receiver be appointed for the concern. The papers declare the estate is valued at \$15,000 and that it consists of automobiles, automobile supplies and accessories, machinery, fixtures, merchandise and open accounts.

### A SIMPLE GAS GENERATOR

The earliest generators were of the drip-feed type, where the water was allowed to drip at certain intervals upon the carbide carried in its reservoir below. The plunger type, wherein the whole of the carbide is sunk below the water level and the creation of pressure from the production of the gas was relied upon to keep back the water and so prevent further generation, obtained a vogue for a time, but the old original method has never been ousted from its place.

The generator illustrated is made on the drip-feed principle. The water is contained in a reservoir forming the upper part of the contrivance with a milled head disc, to which is attached a pointer that passes over a scale of numbers. The carbide



is contained in a cage that rests upon a central pillar fixed in the lower part of the body, this lower part acting as a sump for the reception of the residue falling from the cage above. Around the circumference of the upper part of the cage is a large and soft rubber buffer. The nozzle through which the water flows is also rubber covered. The carbide cage has a large amount of freedom, and, resting upon the central pivot, it rolls about and thus sifts out the spent carbide.

In the generator care is taken to provide for the distribution of the water, and, further, for the ready dissembling of the parts for cleansing of the cage and sump and of the water-spreading channels.

### TO QUIT AFTER FIFTY YEARS

The employees of the Lambertville (N. J.) Spoke Manufacturing Company, fifty-one in number, were notified on April 1 that the firm was going to discontinue business and dispose of the plant, which has been in operation for over fifty years.



New German Idea of an Electric 3-wheel base Automobile



## FOREST CONFERENCE HELD IN NASHVILLE

The first session of the forestry conference held in connection with the Nashville meeting of the Southern Commercial Congress was opened on the afternoon of April 8. The presiding officer was Henry S. Graves, Chief Forester of the U. S. Department of Agriculture. In opening the conference, Mr. Graves spoke as follows:

"In any consideration of the industrial development of the South, the problems which stand out as most important are those connected with agriculture and forestry. The South is favored with climate and soil especially advantageous both for agriculture and for the production of forests. Its cut of lumber aggregates some 24 billion feet a year, or over half of that used in the entire nation. Other industries bring the value of the products of the forests today to upwards of \$550,000,000.

"Louisiana now stands second only to the state of Washington in the production of lumber, while Mississippi, North Carolina, Arkansas, Virginia, and Texas are all ahead of any other state. The lumber industry of the South employs some 217,000 persons, and the allied industries require over 200,000 more. We are dealing with a problem of gigantic proportions and one which touches the welfare of the entire nation.

"It is of vital importance to the South that the land suitable to agriculture be devoted to that purpose and just as rapidly as possible be actually used for the growing of crops. There is, however, a vast area of land, some of it in great blocks in the mountains and elsewhere, and some in small patches within the agricultural areas, which is suited only to the growth of trees. Many persons point to great floods like those we are now having and insist that forests have nothing whatever to do with the control of water. This is as absurd as would be a statement that forests absolutely prevent large floods. They are, however, only one factor and may be entirely overbalanced by other factors like long-continued rainfall or sudden thawing of snow in the mountains. The Geological Survey is developing some very important and interesting facts regarding the influence of forests on erosion in the South.

"Our problem touches the method of handling the forests in a way to benefit the South permanently. The bulk of what is put on the market is from timber 150 years old and upwards. The cutting takes place without reference to a new crop of trees and we still have that greatest enemy of the forest, fire, which prevents the establishment of new growth. Moreover, the forest fires are primarily responsible for the damage resulting from erosion and disturbance of streamflow in the mountains. Unless there is a correction of the existing conditions the supply of forest products will not be maintained, local industries will decline or vanish, land values will be permanently reduced, and the benefits arising from the mere existence of well managed forests will be lost, with unfortunate results.

"There is no region except the far Northwest where forestry is so simple and the results so sure as in the South. It is entirely practical to secure from the area which should be permanently in forest from 20 to 30 billion feet in the long run, by annual growth, if the forest is properly handled. Much of this area is in the mountains and the very management for timber production will secure the indirect benefits of the forest.

"The desired end can not be accomplished at once. Our efforts must be organized. We must with all our forces, national, state, and private, endeavor to overcome the fire menace. The public must aid in the matter of a uniform, consistent, and sane system of taxation, while private owners must accept their responsibilities and handle their property in a way which will build up and not injure the interests of the state."

## IMPLEMENT MEN PICK KANSAS CITY

Directors of the Western Retail Implement and Vehicle Dealers' Association have chosen Kansas City as the 1913 meeting place. The meeting will be January 14, 15 and 16.

## SYSTEMATIC TRAINING OF FOREMEN

By Charles E. Park, Prof. M. E. Mass. Inst. Tech.

We are beginning to feel that with all our efficient machinery and modern methods of manufacture the absence of systematic training is placing our industries in a serious situation, and it has been stated that "today we are reaping the sorry harvest of neglect."

This condition is unfortunate for the industries but deplorably unfortunate for the workmen. To be sure many men have developed under these conditions, but not because their work gave them proper training, but because they were naturally superior men.

The superior man cannot get the desired training in the shop, and the lack of men able to carry small responsibilities or to fill the positions of greater responsibility comes from the lack of training of the workmen themselves, from whom we must select the leaders. Sound industrial education has seemed to be the remedy.

Dr. Lowell, trustee of the Lowell Institute, foresaw the value of such training in 1903. He made a change in the work done by the Lowell Institute in connection with the Institute of Technology. The purpose underlying this change follows:

We have heard a great deal of captains of industry, but efficiency of the industrial art depends, in large measure, and to a constantly increasing extent, upon the capacity of its non-commissioned officers, upon the foremen. These men receive the same education today as the ordinary mechanic, and it has been thought that it would be a great benefit to the community at large if they could have some instruction in the principles of applied science, so that they might understand more thoroughly the work they are superintending, and be ready to apply improvements.

To attempt to train young men separately for the position of foremen would be under the existing organization of labor an impossibility. The foremen must continue for the present to be promoted from among the workmen; hence instruction can be given to them only in the evening.

With this object it was decided to substitute for the advanced courses hitherto given by the Lowell Institute under the auspices of the Institute of Technology, an evening "School for Industrial Foremen," open, free of charge, to young men who are ambitious and well fitted to profit by the instruction.

## ENLARGING POPE PLANT

A new building is to be erected at Hartford, Conn., by the Pope Mfg. Co. that will give the company 60,000 additional square feet of floor space. It is to be four stories and will adjoin the superintendent's building. The company has just disposed to Boston and New York financiers a note for \$1,000,000 to run two years.

## PROPOSES TO RETAIN CONTROL

Major William C. Nones, president of the Kentucky Wagon Manufacturing Company, Louisville, Ky., is aroused over the publication of a story that an "insurgent faction" among the company's stockholders sought to gain control of its affairs. Major Nones has mailed out a lengthy letter to the stockholders in which he states that the dissatisfied stockholders are in such minority as not to warrant serious considerations. The major organized the wagon company over thirty years ago. Later it took over the business of the Cherry-Morrow Company and started manufacturing auto trucks. A big block of the company's stock is owned by Major Nones' family. The major says he proposes to retain complete control and will not, as has been suggested, resign in favor of some younger man.

## Good Roads.

### QUITE A STUNT

On March 25, 1912, a unique train departed from Brownsville, Texas, for a four months' trip over the Frisco System, a Good Roads Special to be operated by the Frisco Railway Company, the Office of Public Roads of the U. S. Department of Agriculture, and the American Association for Highway Improvement. It is a train of four cars, specially equipped, and carries lecturers and an unusual exhibit. This exhibit consists of carefully prepared models of all type of road construction from sand-clay and gravel to bituminous macadam, and of reinforced concrete bridges and culverts, completed and under construction. It also contains miniature models of road machinery and a rock quarry, which are operated by electricity. Each model in the car is properly labeled so that the object lesson in itself affords a considerable road education. The equipment of this train even surpasses that of the four similar Good Roads trains recently operated over other railway systems in the United States.

This train will cover about 15,000 miles in the States of Texas, Louisiana, Missouri, Kansas, Arkansas, Oklahoma, Mississippi and Alabama. A complete schedule of stops has been prepared which provides opportunity for more than three hundred lectures upon good roads topics. These lectures will be given upon those road subjects which are most intimately connected with the locality visited.

Mr. H. C. Wells, Superintendent of Road Construction, assisted by Mr. J. W. Janssen, both of the U. S. Office of Public Roads, will accompany the train to give good roads lectures. Their addresses will be illustrated by over 100 colored lantern slides. The representative of the American Association for Highway Improvement will effect good roads organizations where there is a desire to have them. These men are expert highway engineers and are prepared and willing to answer all question which time permits at each stop.

### TWO BILLIONS FOR ROADS!

That the nation-wide movement for the improvement of the public roads involves a large undertaking is indicated by information just made public by the U. S. Department of Agriculture. Secretary Wilson shows that 300,000 miles of road must be improved before the public road system can be considered really efficient.

There are now but 190,476 miles of improved roads in this country, constituting 8.66 per cent. of the total mileage of all public roads, improved and unimproved. It is figured that the percentage will have to be increased to 20 before traffic can be moved throughout the country with the minimum of wear and tear on horses, wagons and automobiles.

The French system of roads, long considered the best in the world, was bonded by Napoleon III for six million dollars, and something in the neighborhood of \$612,775,000 has already been spent on that system. In this country, owing to the great distances, it is probable that close to \$2,000,000,000 will have to be spent before a proper road system is developed.

While the amount necessary to perfect a great road system seems fabulously large, it does not seem so large when it is divided among the various states and spread over a period of five, ten, or fifteen years. When it is considered that New York State has bonded itself for \$50,000,000 and that \$5,000,000 a year is now being expended by that state, it will be seen that

a nation-wide system might soon be perfected were all states to progress as rapidly.

New York heads the list of states which have made the greatest progress in road building between 1904 and 1909. That state has built 6,911 miles of new road in that period. Georgia is second, and has built 4,344 miles of road in the five years. The gain in Georgia is largely attributed to the use of 4,500 prisoners on the public roads of the state. South Carolina, Alabama and Florida have also made great gains by building sand-clay roads, and this is a very cheap and satisfactory type of road building.

### IMPROVED ROADS IN THE UNITED STATES

Rhode Island, the smallest state in the Union, with an area of only 1,250 square miles, ranks first of all the states in its percentage of improved roads. Under the direction of Secretary Wilson, a very comprehensive statistical investigation of the mileage and cost of public roads in the United States has recently been completed by the Office of Public Roads, U. S. Department of Agriculture. This document reveals many interesting facts. Thus, apparently, it is not because of her small size that Rhode Island is able to boast of 49.14 per cent. of improved roads, for Delaware with an area of 2,050 square miles, has only 6.22 per cent. of improved roads. On the other hand, Massachusetts with an area of 8,315 square miles has 49 per cent. of her roads improved, or very nearly the same percentage as Rhode Island. The size of the state, therefore, seems to have little or no effect on the percentage of improved roads.

The investigations further show that there are 2,199,645 miles of public roads in continental United States. Of this vast mileage, only 190,476, or 8.66 per cent., are classed as improved.

As stated above, Rhode Island leads with 49.14 per cent. of improved roads while Massachusetts is second with 49 per cent. Indiana follows with 36.7 per cent. Ohio, Connecticut, New Jersey, Kentucky, Vermont, and California follow in a descending order, the latter having 17.87 per cent. of improved roads. The states of Wisconsin, New York, Maryland, Utah, Tennessee, South Carolina, Maine, and Michigan range in the order given from 16 to 10 per cent.

Alabama, Delaware, Florida, Georgia, Illinois, Minnesota, New Hampshire, and Oregon have between 5 and 10 per cent. of their roads improved. Of the twenty-two states with less than 5 per cent. of improved roads, North Dakota stands at the bottom with only 0.23 per cent. Secretary Wilson and Director Page, who is in charge of the Office of Public Roads, are ever at work on the problems which confront the road builders throughout the land, and especially those problems which are most frequently confronted by communities in which road improvement has made but little progress.

### BUFFALO'S MILLION-DOLLAR VENTURE

The Buffalo (N. Y.) Electric Vehicle Co. has been incorporated. The directors are William J. P. Seipp, W. G. Feuchter, Thomas R. Wheeler, Frank G. Lane and Marcus A. Alexander. The capital of the new company is \$1,000,000, of which \$700,000 is common stock and \$300,000 preferred. The concern is to manufacture electric pleasure and commercial motor cars. There is a prevalent belief among local dealers that this new concern is a merger of five or six Buffalo motor companies, but this is denied by Attorney Van Allen.

## AUTO PATENT SUITS

There are pending before the various Federal courts of New York, a round dozen actions in equity to test the validity of patents affecting the automobile industry. There are in prospect as many suits, and the indications point to a period of legal testing of the basic principles upon which the motor car rests.

There are only two patents in suit that go to the structure of the car itself, but aside from those two there are actions to test tire, spark-plug, bearing, chain and horn patents in the line of accessories. Most important of the pending actions are the Dyer transmission suits, based upon a patent containing 57 claims which are broad enough to take in the transmission devices of 95 per cent. of all the automobiles made in the world.

Such an important patent action will be fought and scrutinized with the utmost care by lawyers of the highest skill, because if it should be sustained it would mean that 95 per cent. of all the cars made would have to pay royalty to the owners of the patent.

In its palmiest days the Selden patent advocates never claimed that their device was so broad as that of the Dyers. In case the Dyer contention is sustained, the royalty fees, based upon one-tenth of one per cent. would amount to over \$500,000 a year. As the patent has fourteen years still to run, the total royalties would run up into the millions.

The patent covers the type of transmission known as selective, which is used by almost all American manufacturers and almost universally abroad. There is another Dyer patent covering planetary transmissions, but it was sold to the Patents' Holding Association, one of the subsidiaries of the former association of Licensed Automobile Manufacturers, and now belongs to the Automobile Board of Trade.

Application for the selective transmission patent was made by Leonard H. Dyer, February 3, 1900, and it was granted May 18, 1909. Under the rules of the patent office the patentee is protected from the date of his application and for two years previous to it, although the life of the patent does not begin to run its course of seventeen years until it has been formally granted. The status of the litigation is as follows:

Suit was entered last summer on the part of the Enterprise Automobile Company, a New Jersey corporation domiciled at Hoboken to which the patent had been assigned by Dyer. The defendants selected were the Maxwell-Briscoe Motor Company, making the Maxwell line; the Winton Motor Carriage Company, manufacturers of the Winton Six, and the Locomobile Company of America, makers of the Locomobile.

These three concerns, typical of distinct varieties of American manufacture, were later augmented by the addition of the Saurer truck, made at Plainfield, N. J., now a part of the International Motor Company.

The Enterprise Automobile Company asked the United States District Court of the Southern District of New York to enjoin further manufacture; to compel an accounting, damages and such other relief as the court shall decree. Since then the matter has dragged along on stipulations between the attorneys and answers are due in the four suits on the first Monday in April. All four defendants are members of the Automobile Board of Trade, and that organization is defending them.

Besides these main actions the Dyers have been swooping down upon individuals, importers and manufacturers not connected with the Automobile Board of Trade and in two instances have forced manufacturers to take out licenses. These are the Bonner and Correja makers. The latter action was taken recently without resort to the courts.

The other automobile patent suit is that of the Carlson Motor and Truck Company against the Maxwell-Briscoe Motor Company, involving an engine cover plate for a certain type of small automobile. This device is so arranged that it is remov-

able, giving easy access to the vital parts of the motor. It also contains the housings for the valve-actuating mechanism.

From its nature this patent is not so broad and comprehensive as the Dyer patent, but it is important for makers of small cars with opposed cylinders and for a considerable number of commercial types. This case was recently presented to the United States Circuit Court of Appeals and a decision in it is looked for at any time.

Among the accessory suits now before the courts the Midgely Nobby and Staggard tire tread cases are pending in one form or another.

The spark-plug case is very broad and involves a structural detail covered by the Canfield patent. This provides for an air space around the electrode to prevent fouling and to insure a hot spark. The suit was brought by A. R. Mosler & Co. against the Auto Supply Company. The defendant is only nominal, as the case is being contested by the manufacturers of six different makes of spark-plugs. Several companies have been licensed to manufacture under the Canfield patent by the patentees. This patent was purchased from the A. L. A. M. by the present holder and under the terms of purchase the members of the association have the right to manufacture and use such plugs for their own product. This right, however, is not very generally exercised.

The chain patents have been in courts for years and to date the only one that has been sustained by the highest tribunals is the Parsons Non-Skid Tire Grip, the American rights for which are held by the Weed Company. Something over 180 preliminary injunctions have been obtained on the part of the Weed Company since it entered the courts to enforce the patent and twice cases have been carried through the United States Circuit Court of Appeals. The latest action taken by the company was its application for an injunction against the Atlas Chain Company, of Brooklyn. Judge Lacombe granted the application and set the case down for a hearing later in the year. The electric horn litigation is in the inflammatory stage, the chief actors in this line being the Lovell-MacConnell Manufacturing Company, of Newark, who have a dozen cases in the various courts to test and enforce the Klaxon patents. Besides all these matters there are suits in all stages of completion covering axle construction, carburetors, gauges of various types and almost every other automobile part and accessory.

Under the ruling of the United States Supreme Court on Monday, March 11, the rights of patentees are declared to extend to monopoly, even reaching to materials and supplies of certain types to be used with the patented devices. This ruling is new as far as the Supreme Court is concerned, but it follows the procedure and precedents laid down by the United States District Courts in previous actions, which were affirmed in the United States Circuit Court of Appeals. All told, the probabilities for some lively happenings in the patent side of the automobile industry are extremely promising.

## AUTOMOBILES IN THE FOREIGN TRADE OF THE UNITED STATES

The automobile record extends back to the fiscal year 1902. During that period the exports have grown from \$948,528 in 1902 to \$17,594,336 in 1911, inclusive of automobile tires. For the fiscal year now approaching its close the total exports of automobiles and parts will approximate 25 million dollars in value. In the meantime imports of automobiles have grown at a less rapid pace, from \$550,000 in the fiscal year 1902 to \$2,250,759 in 1911, and an indicated total of approximately \$2,500,000 in the fiscal year 1912. The import figure for 1912 is, in fact, much less than that of the fiscal year 1907, when the total was nearly five million dollars, thus indicating a marked decline in recent years in importations, though the growth in exportations during the same period has been very large.

**E. R. SHAW**

It is with very much of gratification that we note the recent honor conferred on Mr. Shaw. He has been elected president of the Federation of Trade Press Associations in the United States.

There are so many warm friends that Mr. Shaw left behind in the vehicle trade when he parted company from *The Hub* to become the owner of *Practical Engineer*, one of the most



flourishing trade journals in the middle west, that they will be glad to read that he is gathering honors as well as money, which we think are both deserved.

We can only express one part of Rip Van Winkle's toast in pledging health to Mr. Shaw, and it is "that he may live long," the "and prosper" part is now a superfluity. He has earned his success courageously, his many friends wish him yet more, but his warmest friends wish him health to enjoy what he has. The Association to which he has been elected as presiding officer has honored itself as well as Mr. Shaw.

**THE LATEST AUTO ANNUAL**

One of the most comprehensive illustrated books giving descriptions of motor cars, has just been issued by the Automobile Board of Trade. It is the Ninth Annual Handbook of Gasoline Automobiles, prepared annually for the information of the public who are interested in the manufacture and use of gasoline-driven vehicles.

The present volume is one of the largest ever issued and contains 207 pages with illustrations of cars made by the leading manufacturers.

The illustrations, including various body equipments, cover more than 500 different models, giving particulars and prices of each, together with the A. L. A. M. horsepower rating, which is the standard form of rating and used by most of the States where horsepower rating is considered, and by insurance companies.

Copies of the book may be had by sending ten cents to cover postage, to the Automobile Board of Trade, 7 East 42d Street, New York.

**WAGON AND PLOW FIRMS TO UNITE**

Announcement has been made of the proposed consolidation of the Illinois Iron and Bolt Works, and the Star Manufacturing Company, of Carpentersville, Ill., with a total capitalization of \$1,850,000. The Illinois company manufactures wagon skeins, steel axles, jack screws and kindred products. The principal product of the Star company is plows. The industries are located on opposite sides of Fox River at Carpentersville, five miles north of Elgin.

**WILLYS NOW CONTROLS GRAMM COMPANY**

John N. Willys, president and sole owner of the Willys-Overland plants at Toledo, O., now controls the Gramm Motor Truck Co., of Lima, O., having purchased the majority of stock. While no price is given, still it is stated on good authority that Mr. Willys paid \$500,000 for the controlling interest. What effect the deal will have on the Garford truck interests has not been stated. It is said that in all probability Mr. Gramm will continue to be identified with the Gramm company, probably as consulting engineer. The Gramm truck agencies will be offered to dealers handling Overland pleasure cars and they will be given preference.

The Gramm plants at Lima are located on 22 acres of ground. There are  $6\frac{1}{4}$  acres under roof. Twelve hundred men are employed. The buildings are of steel and reinforced concrete and are valued at \$1,250,000.

**ED. HARRIS MAKES A CHANGE**

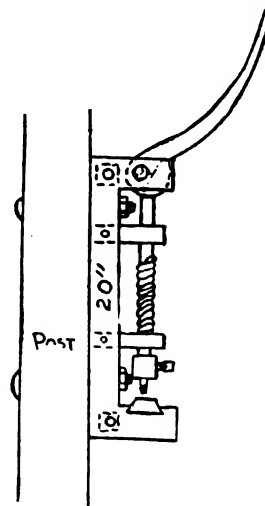
Ed. F. Harris recently resigned as assistant sales manager of the Parry Manufacturing Company, with whom he had been associated for several years. Mr. Harris has accepted the position of assistant sales manager with the Henderson Motor Sales Company.

**IMPROVEMENTS AND EXTENSIONS**

The Twyford Auto Manufacturing Co. has been organized at Houston, Tex., with \$400,000 capital. The company has purchased thirty acres of land with an equipped machine shop, office buildings, etc., and later will erect additional buildings and install additional machinery.

**HOME MADE PUNCH**

It will be noted that the power in the punch is exerted by means of an eccentric on the end of the lever shaft. This operates on the end of a steel shaft, the bottom of which is provided with a shuck to hold  $\frac{1}{2}$ -inch round shank punches. The shaft is turned and works in two close fitting eyes made from flat stock and riveted into the frame with two rivets to keep them rigged so that they never bind the shaft and hinder



the operation of the spring which serves to lift the punch. The frame of the punch is also made in duplicate.

The anvil is of steel and dovetailed into the frame. It is provided with two holes  $\frac{3}{16}$  inch and  $\frac{1}{4}$  inch in size, which are the only sizes tried so far with this punch. This is a very handy tool for punching all thin band iron which goes into the making of a wagon, and especially plates which are to be nailed on.

## AN ENGLISH FRONT DRIVEN VAN

This outline drawing is the "Pilgrim," and it is described as being very satisfactory.

The chassis is a front-driven machine, engined with a two-cylinder horizontal motor of the opposed type. The policy of the constructors in deciding to adopt such well criticised characteristics as air cooling and the horizontal disposition of the cylinders, to say nothing of a front drive, is a bold one. Immunity from sideslip, shortness of overall dimensions and exceptional body space are excellent qualities to endeavor to secure. The Pilgrim cannot be made to sideslip; the fact that all the mechanism, other than the steering column, is below the frame line is evidence of compactness of arrangement.

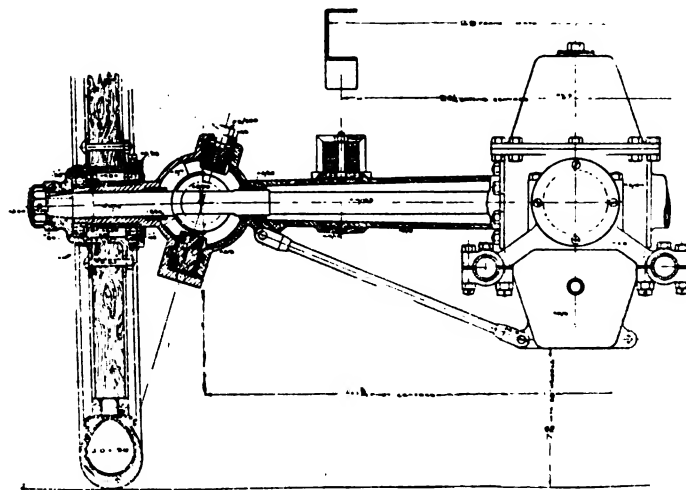
The engine, which is the rearmost unit of the driving mechanism, is located with its two cylinders transversely across the middle of the frame. In front of the engine, the clutch and then the change-speed gearbox transmit the power to the front axle by a bevel drive which surrounds a differential gear. The front steering wheels are also the drivers.

Air cooling has not been adopted without most careful consideration. Primarily it is the fore and aft position of the gills in vertical planes which ensures sufficiency of cooling; the natural upward flow of the heated air is encouraged between each pair of ribs, whilst the transverse positions of the cylinders enable the full effect of the natural air draught to be secured. Considerable advantage is also claimed for the exact proportions of the ribs, which are of unusual thickness at the bases. The general arrangement of the engine is clearly indicated in two of the drawings. The exhaust valves are located horizontally in the cylinder heads, whilst the inlet valves are placed over the cylinders and are operated by direct-acting plungers from the centrally placed camshaft; this is an unusual form of valve disposition. The exhaust valves receive their motion from similar plungers, but through suitably placed rocker arms.

The lubrication system includes an eccentric-driven pump, which keeps the two-to-one gear casing in a state of overflow; the excess of oil then circulates through the drilled crankshaft and to all the engine bearings. The starting handle is placed

ball and plain bearings in the gearbox is, however, an interesting feature.

The front axle is of entirely novel design; it is the embodiment of a bevel-drive live axle and of pivoted steering wheels. The differential gearbox casing is a stiff, pot-shaped casting and is provided with a large removable top cover. Steel sleeve castings are bolted to this box and are braced to it by suitable stays. The points between these sleeves and the hubs of the steering wheels are of globular shape, the shafts being pro-



The Front-driving and Steering Axle

vided with universal couplings concentric with the outer casings. The weight and the side strains are distributed between the surfaces of the casings and by spigoted pivots, whose axes are inclined towards the point of contact of the tires and the road.

Steering gear and control details are of satisfactory design. The steering column is placed over the center line of the chassis, and not the offside. The whole of the mechanism, built up together and radiused about the front axle, is located below the front raised portion of the frame. The dropped rearend enables the tailboard of the body to be located at only 15 inches from the ground. The exceptional loading area is evident. The overall length is only 11 feet, with an 8 foot wheel base.

## TO PROTECT TRADE NAME

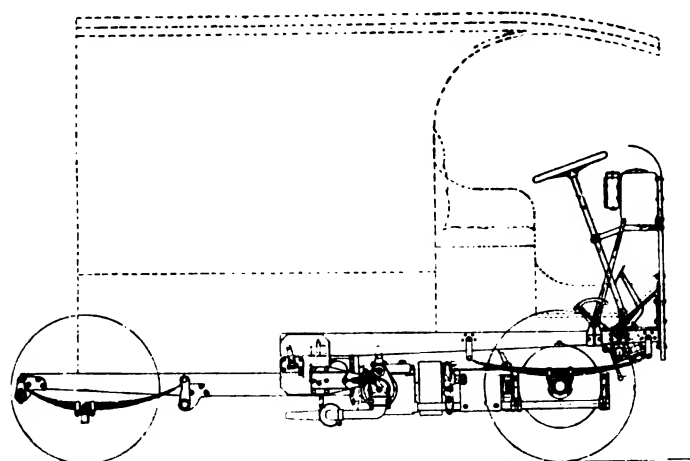
Through a suit filed in Cincinnati, March 14, the Ohio Carriage Manufacturing Company, of Columbus, seeks to have the Split Hickory Wheel Company, of Cincinnati, restrained from using the term split hickory either as a part of its firm name or as applying to its products. The Columbus company claims the sole right to the term because of priority of usage.

## NEW MANAGER FOR MOLINE WAGON CO..

E. E. Parsonage, connected with the general sales department of Deere & Co. since last summer, has assumed the duties of general manager of the Moline (Ill.) Wagon Co., succeeding A. L. Moore. Mr. Parsonage was general agent for the Smith Manufacturing Co. at Minneapolis previous to becoming identified with the Deere industries. He is a Moline boy well known to the implement trade throughout the country.

## NEW SALES MANAGER FOR KEYS BROS.

P. J. Hindmarsh is the new sales manager for Keys Bros., the Council Bluffs carriage manufacturers. He was for several years on the road for the Columbus Buggy Company and since has been with Moon Bros., of St. Louis. He becomes financially interested in Keys Bros. For the present he will retain his residence at Lincoln, Neb.



The General Arrangement of the new Pilgrim "Front Driver"

at the back of the chassis, and a simple form of locating device for this detail is shown in one of the engine drawings.

The whole of the power system is mounted on a pair of tubes which are socketed in the engine case at one end and in the front axle gear case at the other; the whole system performs the functions of a combined radius rod and torque bar, the after end of which is slung on a cross tubular frame member carried in special side brackets.

The clutch is of a simple metal cone type, and the gearbox, direct drive and sliding type of gears. The combination of



## VALENTINE'S NEW OFFICES

The offices occupied for so long a time facing the City Hall on Broadway, by Valentine & Company, in New York, had finally to be given up. Expansion was checked because there was no more available room on the floor. The move has been radical. Fourth avenue and Thirty-first street is quite a step up town. The vicinity is graced by the new Vanderbilt Hotel, and not so far away is the new and impressive Grand Central terminal. Under foot is the Subway. So much for the exterior landmarks.

The Whitehouse Building is a big one, mainly steel, stone, terra cotta and cement. The entire 8,000 square feet of the tenth floor has been found none too much to comfortably house the executive and New York offices. As the offices were planned by the new tenants, everything has been done that experience said was good. Facing Fourth avenue (the east) is a suite of rooms for the officers and a splendidly appointed Board room. Its walls are covered with oil portraits of the officers who were the "old guard," the men who laid the foundations. The general offices are separated by a hall from the official quarters. The dominant note here is convenience and comfort, light and good air, with plenty of room. The result is pronounced fine by those who have looked the premises over. As for the mechanical aids for the speedy, quiet and comfortable conduct of business, such as interior telephones, connecting everyone with everyone, and the general phone through the switchboard in the reception foyer, nothing has been overlooked. Another one of the advanced ideas is the reflected system of electric lighting, by which light without shadow is made a fact. As for the fittings, what might one expect in a new place with the sole idea of having only the best for the purpose?

But progress does not stop here. Across the river at the factory, a thirty-three per cent. addition has been made to the color works, and a lot of new machinery placed. A new varnish and oil storage building of two stories and 50 x 100, has had to be added to the other buildings, which now make a pretty good sized village, and all for the better accommodation of a very rapidly expanding business.

## FRENCH CARRIAGE SHOP, TIME 1560

This is authentic and illustrative of the manner of work of



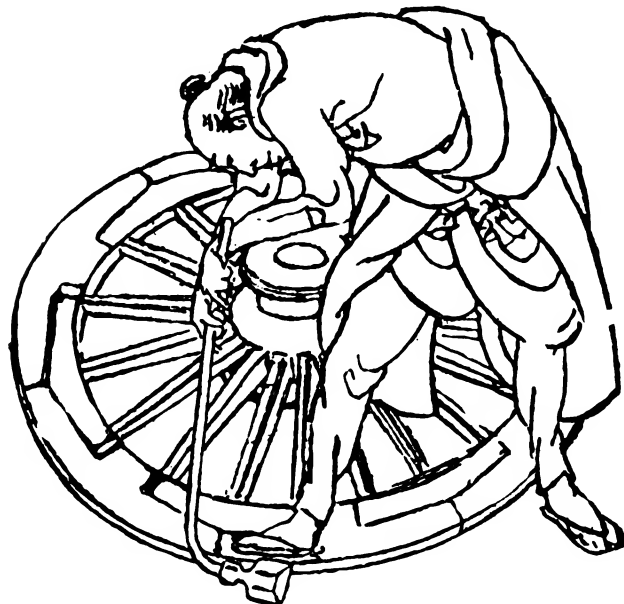
the old-time French carriage builder. It is from a work published at that time.

## WILL MAKE AUTO WHEEL PARTS

Mark Merriman, vice-president of the Hayes Wheel Company, of Jackson, recently bought the buildings and site of the old Prouty Company, of Albion, Michigan, and soon will reopen it to manufacture parts of automobile wheels.

## THE WHEEL MAKER, JAPAN STYLE

This illustration shows the remarkable virility and strength as a mere picture for which the Japanese articles are noted.



worthy. It is, however, more interesting because it is a drawing from life of the method of work of a Japanese wheelwright. It is by the famed artist, Hokusai.

## RUBBER BUMPER FOR AUTOS

Rubber bumpers between the frame and body of an automobile are being adopted by makers of high-grade cars. They prevent body squeaks and other unnecessary noises, and these little cushions of rubber not only produce silence, but reduce the shock of impact in hitting holes, rails and rough spots, as well as lessening the wear and tear of bodies under prolonged hard usage.

## TOTAL EXPORTS OF LEATHER AND MANUFACTURES OF.

Total exports of leather and manufactures of were \$4,032,749 for November, 1910, and \$4,814,687 for November, 1911. For eleven months ending November, 1910, \$49,562,962, against \$51,276,583 for eleven months ending November, 1911.

He must be a wise, a friendly and a well-bred man that acquits himself perfectly in the act of obliging.

It is one thing to know how to give and another but equally important thing to know how to keep.

That which is given with pride and ostentation is rather an ambition than a bounty.

Mort than can be used is generally abused, of time, money or any blessing.

He that gives to be seen would never relieve a man in the dark.



# Trade News From Near and Far

## BUSINESS CHANGES

R. H. Grimmett has disposed of his entire business in Stroud, Okla., to D. B. Garrett.

Thad Stevens has disposed of his vehicle business in Lawrence, Kas., to Henry Shaake.

E. Manke has disposed of his stock of buggies, etc., in Rapid City, S. D., to C. M. Williams.

F. M. Joy has purchased the stock of vehicles, etc., of B. O. Callendar, in North Platte, Neb.

Geiger & Martinson have purchased the stock of vehicles, etc., of A. A. Hall, in Conroy, Ia.

J. J. Arnold has purchased the stock of vehicles, etc., of Hanson & Suby, in Nome, N. B.

Anton Overseth has succeeded to the vehicle business of Overseth Bros., in Fairview, S. D.

Wood & Brick have purchased the stock of buggies, etc., of James Hubka, in Virginia, Neb.

John Wolting has sold out his stock of vehicles, etc., in New Era, Mich., to Francis Hesselsweet.

W. E. Bray & Co. have purchased the stock of buggies, etc., of Lytle & Bird, in Jamesport, Mo.

Wm. E. Broadhurst has purchased the stock of buggies, etc., of John M. Gregg, in Parkville, Mo.

Boyd & Sewell have purchased the stock of vehicles, etc., of T. J. Shouse, in Camden Point, Mo.

Thomas Wright has sold out the stock of buggies, etc., in Long Pine, N. D., to George Beatty.

N. T. Staudt has sold his buggy, wagon and harness business at Woodsfield, O., to F. V. Burkhart.

Franknell Bros. have purchased the stock of vehicles, etc., of Calvert & Wilson, in Ashland, Neb.

Peter Scragg has purchased the stock of vehicles, etc., of Frank G. Field, in Pretty Prairie, Kas.

Albert Tucker has disposed of his stock of vehicles and hardware in Eureka, Kas., to Theo. Fischer.

John J. Lutz has disposed of his stock of vehicles, etc., in Alta Vista, Kas., to F. G. Berridge, of Topeka.

Fred Hemker has disposed of his hardware stock in Great Bend, Kas., but continues in the buggy business.

Burroughs & Danielson have succeeded W. H. Burroughs in the vehicle and implement business in Concordia, Kas.

Elvestrom & Sampson have purchased the stock of buggies and implements of A. B. Elverstrom, in Bricelyn, Minn.

Grant McFarland has purchased a half interest in the vehicle and implement business of E. F. Morris, in Hartington, Neb.

Sommerness Bros., of Columbus, N. D., have purchased the stock of A. N. Anderson and will consolidate it with their own.

The Sioux Falls (So. Dak.) Plow & Wagon Co. has changed its name to the Dakota Plow & Wagon Co., and increased its capital from \$100,000 to \$250,000.

## NEW FIRMS AND INCORPORATIONS

O. A. Bullock has engaged in the vehicle business in Bagley, Ia.

Burns Bros. have opened up a stock of vehicles, etc., in Moneta, Ia.

R. C. Caulk is about to open a new stock of buggies, etc., in Allen, Neb.

John C. Dix is about to build a small carriage factory in St. Louis, Mo.

J. B. Mack is about to open a new stock of carriages, etc., in Albion, Neb.

William Fogey has opened a new stock of carriages, etc., in Loveland, Colo.

The Aldrich Hardware Co., of Marion, S. D., is adding a large line of vehicles.

G. J. Werner has engaged in the buggy and implement business in Wymore, Neb.

Peter Schaffer is engaging in the vehicle and implement business in Buffalo, Minn.

John Poppler has engaged in the vehicle and implement business in Frazee, Minn.

A. T. Shadle, of Beaver, Ia., is adding a stock of automobiles to his vehicle business.

W. T. Detweiler, of Grand Island, has engaged in the vehicle business in Ansley, Neb.

Boyer Bros. have just established themselves in the vehicle business in Bridger, Mont.

H. Calvert is about to engage in the vehicle and implement business in Verndale, Minn.

George Zirbes is about to open a stock of vehicles and implements in Hazleton, N. D.

W. L. Bevers has opened a new stock of vehicles, automobiles, etc., in Zumbreta, Minn.

W. J. Tooley & Son have engaged in the vehicle and implement business in Minden, Neb.

Grow & Fitzgerald are opening a new stock of buggies and implements in Los Molinos, Cal.

The John Marker Co., to handle vehicles, has been incorporated at Chicago with \$2,000 capital.

Bassett & Pearson are about to engage in the vehicle and implement business in Peever, S. D.

The West End Implement Co. has opened a new stock of buggies and implements in Keota, Ia.

C. M. Daughman, of Parsons, Kas., is about to open a new stock of vehicles, etc., in Ottawa, Kas.

Henry Hammers has established himself in the vehicle and implement business in Maple Lake, Minn.

Linster & Gorham have formed a partnership and will handle hardware and vehicles in Benchland, Mont.

The Masquere Carriage Co. has been incorporated in New Orleans, La., with a capital stock of \$5,000.

The Yadkinville Buggy Co. has been incorporated in Yadkinville, N. C., with a capital stock of \$25,000.

R. L. Fletcher & Co. are about to occupy a new store building in Grand Bay, Ala., and will carry buggies, etc.

The Owens Wagon & Automobile Works have incorporated in Charlotte, N. C., with a capital stock of \$50,000.

The Clay & Gilmore Co. has been incorporated in Moody, Tex., with a capital of \$20,000, to handle vehicles, etc.

The T. J. Coffman Co. has been incorporated in Spokane, Wash., to handle vehicles, etc., with a capital of \$50,000.

The Baker Electric Co. has been incorporated in Kansas City, Mo., with a capital of \$5,000, to handle electric cars.

Martin Trenne has just opened a new stock of vehicles, etc., in Noonan, N. D., moving there from Fergus Falls, Minn.

A. R. Few has opened a new farm machinery business at Kirksville, Mo., and will carry a line of wagons and buggies.

Coo Brothers, implement dealers at Sterling, Ill., have rented an additional room and intend to open a carriage repository.

## FIRES

The carriage and automobile building shops of Geo. Lenhart, at Maple Glen, Pa., a suburb near Ambler, was destroyed by

fire March 16. No less than seven automobiles in the shops were burned and the loss is estimated at \$40,000.

The Hartsville (S. C.) Buggy & Wagon Co. suffered a \$15,000 fire loss on March 2.

The stock of buggies, etc., of Bostrom Bros., in Max, N. D., has been destroyed by fire.

The carriage shop of E. Kingsley, Beloit, Wis., was gutted by fire on March 5, causing a loss of \$5,000.

J. R. Turner, dealer in wagons and buggies at Adams, Ind., suffered a loss by fire of \$3,500; insurance \$2,350.

Fire did damage to the extent of \$2,000 to the Wurster Wagon Works, 89 Washington street, Buffalo, N. Y., March 22.

The carriage manufacturing plant of Anthony J. Grad, 718 Broadway, Buffalo, N. Y., was almost destroyed by fire of unknown origin March 3, the loss entailed amounting to close to \$25,000.

### MEETING OF ST. LOUIS CLUB

The monthly meeting and dinner of the Implement, Vehicle and Hardware Association, held at the American hotel, St. Louis, on the evening of March 11, was one of the most interesting and enjoyable of any held for a long time. The attendance was large. One of the features of the meeting was the reading of a paper by Carl Hirdler, traffic manager of the Sligo Iron Store Company, on "The Interstate Commerce Commission."

Preliminary arrangements were made for the annual summer steam boat excursion to be held by the Association in June.

A short talk was made by Robert F. Walker, ex-attorney general of Missouri and a classmate of H. T. Curtright, local manager of the Oliver Chilled Plow Works, who invited him to address the Association. W. H. Roninger of the Banner Buggy Company, who was down on the program to give a talk on some of the interesting sights he saw while on a recent visit to the Panama Canal, owing to the length of the program, postponed his talk until the April meeting.

### AKRON LANDS IDEAL PLANT

A new corporation to be known as the Ideal Commercial Car Co. will be organized in Akron, O., with an authorized capital of \$200,000 to manufacture commercial cars of all kinds. The Ideal Commercial Car Co. has been doing business in Detroit for a number of years and some time ago a number of business men of Akron started a movement to have the factory removed to Akron. The plant of the Gilbo Machine Co. in East Akron has been leased. T. E. Greighton is president of the company; J. C. Sage is engineer.

### THE UNDERSTUDY

It is claimed by broad-minded business men that every manager of a store, factory or other institution should have an understudy, some man so carefully and thoroughly trained as an assistant that at any time he could take the manager's place and the work would go on without halt or hindrance. This is called rational preparation for emergencies, because in the course of events every man gets sick or something happens to interfere with his being present at work. Institutions of any magnitude are important enough that they should be kept going and never have to stop because of the non-arrival on the scene of some one man.

The interesting question in the industrial lines is just how far this subject of the understudy should be followed, or rather the practice in the way of preparation for emergencies. Evidently, if the manager needs an understudy, there should also be some one to take the place of the superintendent in case of illness or his being incapacitated from any cause. The same is true of department foremen, etc.

### WAGES

Wages, the remuneration of labor, can only be paid out of the product of labor, or out of what can be exchanged for the product of labor. The last point is of profound importance, because of the distinction between real and nominal wages. Nominal wages are the money wages or mere coins which a man received from his employer. Real wages are the commodities—food, fuel, housing, clothes, and other necessities and comforts—which a man can purchase with his nominal wages.

One of the most dangerous pitfalls in every manufacturing business lies in either inability or unwillingness to know the exact cost of production. Competition is becoming keener every day, and a few cents, more or less, either way, may mean certain ultimate success or failure. There is no information placed before the manufacturer that is more important than an accurate computation of the cost of manufacturing each separate article which he sends forth into the markets of the world.

An actual cost system, to be trustworthy, must take into account all the factors entering therein; it must be a matter of judgment founded upon observation, and a constant vigilance on the part of those in authority. Unfortunately many manufacturers consider a cost system nothing more than a lot of "red tape," and insist upon keeping down office expense salaries.

The Hon. Sir Thomas Lipton stated, when asked how to succeed: "There is no royal road to riches, and in a business as big as mine, no back lane. My methods are open and anybody can see them. My receipt for prosperity is: Work hard, deal honestly, be enterprising, exercise careful judgment, advertise freely but judiciously, and understand your costs." There are no secrets about cost keeping; much is written and preached upon this subject every day.

### EFFECT OF WARM DRYING OILS UPON PURE IRON

Oil.	Initial Weight of Iron.		Loss in Weight.	Remarks.
	Grammes.	Grammes.		
Linseed (raw)....	0.5384	0.0000		Metal bright.
Linseed (boiled)..	0.5398	0.0002		Metal dull, slaty color.
Poppy .....	0.5274	0.0000		Metal bright.
Tung .....	0.5392	0.0000		Metal bright.

Clearly, therefore, the solvent action of the oils upon iron is negligible under the above conditions, and, as far as the solvent action upon the metal itself is concerned, there is no reason why in cold weather the paint should not be first of all warmed in hot water before being applied to the metal. This would render the paint more fluid and consequently more easy to work; it would increase the rate of drying, and promote the evaporation of those films of moisture which are so liable to collect upon all metallic surfaces exposed to the external atmosphere. This is worth considering, perhaps, in the added amount of iron work now falling to the painter's job.

### BIG AUTO PLANT FOR HOUSTON

On May 1, the Chattanooga (Tenn.) Buggy Company will be ready for business in its new quarters on Chestnut street. The new building will be complete in every detail. There will be two stories and a basement.

The Mandt Wagon Works at Stoughton, Ill., will erect at once good substantial buildings for its factory.

## RECENTLY EXPIRED PATENTS OF INTEREST TO THE VEHICLE INDUSTRY

### Patents Expired March 12, 1912

- 535,380—Stump Joint for Carriages. Thomas R. Murdock, Auburn, N. Y.  
 535,423—Thill Coupling. John W. Sprint, Boyce, Va.  
 535,427—Coupling for Vehicles. Calvin G. Turner, Wilmington, Del.  
 535,448—Torsion Spring Gear for Vehicles. William Kyle, Brockville, Canada.  
 535,667—Step for Wagon Shafts. George O. Bucknam, Stoneham, Mass.  
 535,711—Hood for Carriage Tops. Louis G. Mayer, Cincinnati, Ohio.  
 535,743—Wagon Jack. Herbert B. Sweet, Scytheville, N. H.  
 535,775—Vehicle Wheel. Frank P. Share, Brooklyn, N. Y.  
 535,781—Thill Support. Edgar F. Woodruff and Rankin R. Bellew, Hartwell, Ohio.

### Patents Expired March 19, 1912

- 535,858—Seat for Vehicles. John Reichert, Racine, Wis.  
 535,904—Bolster Spring. Nathan L. Holmes, Racine, Wis.  
 535,960—Vehicle Wheel. Russell A. Shay, New York, N. Y.  
 535,991—Coal Wagon. George B. Mark, New York, N. Y.  
 536,072—Lubricator for Vehicle Axles. Henry B. Eareckson, New York, N. Y.  
 536,167—Felly Expander. Alonzo B. Arnold, LeGrande, Iowa.

### Patents Expired March 26, 1912.

- 536,179—Shaft Attaching Device. Joseph R. Baxter, Youngstown, Ohio.  
 536,264—Wagon Axle. Daniel Bullock, Fort Atkinson, Wis.  
 536,363—Pneumatic Tire. Willard A. Warren, Buffalo, N. Y.  
 536,384—Whiffletree Hook. Targe G. Mandt, Stoughton, Wis.  
 536,398—Front for Vehicles. John Sauder, Farmersville, Pa.  
 536,463—Whiffletree Hook. Louis S. Flatau, Pittsburg, Tex.  
 536,502—Wheel Tire. Maurice Adler, Amsterdam, Netherlands.  
 536,528—Vehicle Wheel. Godfrey Jobson, London, England.

### Patents Expired April 2, 1912.

- 536,657—Whip Socket. Ferdinand C. Roberts, Chicago, Ill.  
 536,725—Spring Seat. George E. Howard, St. Louis, Mo.  
 536,752—Wheel Tire. Arthur A. Kupfer and Herman C. Kupfer, Providence, R. I.  
 536,818—Adjustable Vehicle Pole. William D. Parr and Thomas H. Weber, Collinsville, Ill.  
 536,864—Apparatus for Raising and Lowering Buggy Tops. Frank H. Farman, Cincinnati, Ohio.  
 536,868—Device for Hanging Carriage Curtains. Silas M. Fry, Greensburg, Pa.

The above list of patents, trade marks and designs of interest to our patrons are furnished by Davis & Davis, solicitors of American and foreign patents, Washington, D. C., and St. Paul Building, New York City.

## FINANCIAL STRINGENCY AND ITS CAUSES

A gentleman well qualified to form an opinion on the subject recently stated that, notwithstanding coach builders almost everywhere in Australia had more work than they could do, the trade was less profitable than it had been. The proportion of coach builders seeking accommodation on settling day was on the increase. He was at a loss to account for the paradox of financial stringency in times of abounding prosperity, excepting on the assumption that adequate charges to compensate for higher wages and increased cost of materials were not being made.

## STUDEBAKER NOTES SOLD

The Studebaker Corporation, South Bend, Ind., has sold \$8,000,000 of 5 per cent. serial notes to New York and London bankers. The maturities are \$400,000 every six months beginning September 1, 1912. The notes are redeemable as a whole at 101½ and interest on thirty days' notice. The bankers are now offering the notes at 98 and interest.

Coach builders in all departments of the trade are very scarce in Australia. Many employers are turning down a percentage of orders, due to an inability to get hands.

## OBITUARY

**Charles E. Tolley**, aged 76, for many years engaged in the manufacturing of wagons at Pittsburgh, Pa., died March 19.

**John P. Wechselberg**, aged 78, died at his home in Milwaukee, Wis., March 11. He moved to Milwaukee in 1848. In 1861 he engaged in the carriage making business in a building at Jefferson and Michigan streets. About ten years ago he retired from active business. Mr. Wechselberg is survived by his wife and eleven children.

**John Hayes Crebbin**, for many years prominent as carriage manufacturer at New Orleans, La., died March 31 in that city.

**Fred. Koring**, 69, retired wagon manufacturer, died March 31 at his residence on Price Hill in Cincinnati. Koring invented the first dumping wagon used successfully in the coal trade, in that part of the country.

We find this in an automobile announcement: "Luxurious closed bodies of the latest designs by Quinby and Brewster." Do you get it?

## Wants

Help and situation wanted advertisements, one cent a word; all other advertisements in this department. 5 cents a word; Initials and figures count as words. Minimum price, 30 cents for each advertisement.

### POSITION WANTED.

**Position Wanted** as blacksmith foreman and assistant superintendent of carriage factory. Have been filling both of above positions in popular priced carriage factories for many years; thoroughly experienced and willing to work. Address Peter Steinbecker, 109 Linden St., Carthage, O.

**Position Wanted** as Sales Manager of carriage or automobile firm. Carriage experience of twelve years in general office work, purchasing department, traveling, and at present as sales manager of carriage factory turning out about ten thousand vehicles annually. Personal reasons for changing. Answers confidential. References given. Box 25, The Hub, 24 Murray St., New York City.

### HELP WANTED.

**Wanted**—Competent carriage or automobile draftsman with experience in body designing. Must understand retouching and perspective and be capable of making a finished wash drawing. Permanent work for the right man. Address, stating experience and salary wanted Box 104, The Hub, 24 Murray street, New York City.

### SECOND-HAND MACHINERY WANTED.

We are in the market for the following second-hand machinery in good condition: One Defiance No. 1 Improved Tire Bender, one West Hydraulic Tire Setter No. 4, one Long & Allstetter Tire Welder No. 2. Send full description and lowest price to Avoca Wheel Co., Avoca, N. Y.

### PATENTS.

**Patents**—H. W. T. Jenner, patent attorney and mechanical expert, 608 F St., Washington, D. C. Established 1883. I make a free examination and report if a patent can be had and exactly what it will cost. Send for circular.

### FOR SALE OR LEASE WOODWORKING PLANT

Suitable for carriage, auto or furniture work; two large dry kilns and lumber yard. Low rent for whole or part of building.

**THE WIGGERS CO., 1417 Plum St., Cincinnati, O.**

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## SHERWIN-WILLIAMS VEHICLE FINISHES

The principle of the construction of Sherwin-Williams Undercoating, Ground Colors, Colors and finishing coats is based on the relation of one coat to another, careful study having been given to the particular surfaces on which the material is applied. Each individual product is so constructed that it will best accomplish the purpose for which it is intended. It works well with the finishes used in other steps in the painting process, giving a completed finish which will be uniform, durable, have individuality and character.

*S-W Body & Gear Primers*

Perfect in oil quality make them better priming coats. They penetrate the wood, seal the pores and form a substantial foundation for subsequent coats.

*S-W Metal Primers*

These Primers are elastic, extremely tenacious and dry on schedule time.

*S-W Rough Stuff*

Produces a compact, close-knit, non-porous surface. It is elastic and uniform in fineness and consistency.

*S-W Gear Fillers*

On account of fine grinding, they produce a smooth elastic filler coat. Their shade and tone make them desirable undergrounds for color coats.

*S-W Surfacers*

Intended for rounding out the surface on gears. The quality of the raw materials make them excellent sanding and intermediate coats. They bind thoroughly and are elastic.

*S-W Ground Colors*

Have the necessary opacity and shade of various colors to bring out the tone to the fullest extent in semi-transparent and transparent colors. They are noted for their fineness of grinding.

*S-W Q D Colors*

They have been for years the standard for leading coach and carriage builders. Made of original and choice colors, ground to the finest degree in Japan.

*S-W Color Varnishes*

A modern color in varnish that will flow and work easily and in harmony with an elastic finish. Offered in rich, distinctive and individual shades.

*S-W Finishing Varnish*

Varnish of the best quality. It works and flows perfectly producing a durable, elastic and full finish.

A trial has convinced many of their uniform high quality.

Send Inquiries to 626 Canal Road, Cleveland, Ohio.

## SHERWIN-WILLIAMS COLORS AND VARNISHES



The Sign of Quality

Which is more perilous  
—farming or metal  
working?

In occupational injury  
where does the  
average of fault lie?

What nation sets the  
standard in  
accident prevention?

On what day  
of the week  
do the  
most accidents  
occur?

How much  
of the compen-  
satory  
award  
reaches the in-  
jured workman?

What relief  
system does  
most  
for indus-  
trial efficiency?

Who are more  
subject to  
accident—  
male or fe-  
male workers?

Why are New  
York accident  
rates many  
liability  
times those  
of Germany?

How can  
American  
liability  
methods be  
improved?

What are the  
defects  
of the English  
system?

How can our  
annual roll of  
over  
1,000,000  
casualties be  
reduced?

What propor-  
tion of the  
insurance  
should the  
employer bear?

What did  
10,000 manu-  
facturers  
say of our  
present liability  
system?

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### CONTENTS

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Chapter IV. Obligatory Insurance An Important Factor in Accident Compensation—Various Forms of Insurance, Mutual Insurance, Statistics, Scientific Inspection, Litigation.

Chapter V. Hazardous Occupations—Comparative Hazard of Industry and Farm.

Chapter VI. Prevention of Accidents, Cause and Cure of Injuries, European Safety Museum (Accident Prevention Institutions).

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Chapter XII. Insurance under the Compensation Acts.

Chapter XIII. Principal Defects of the British Legislation.

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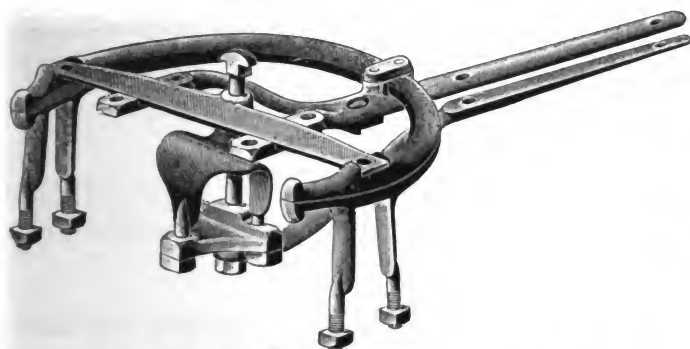
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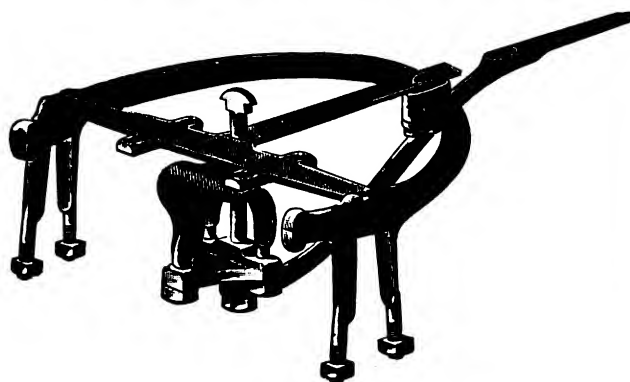
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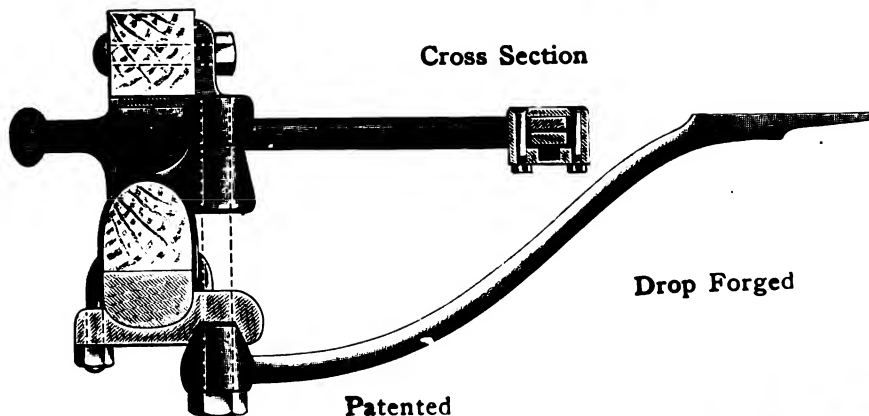
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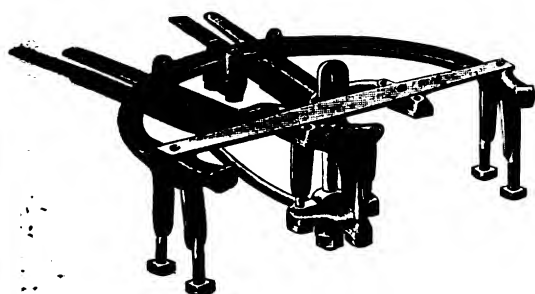
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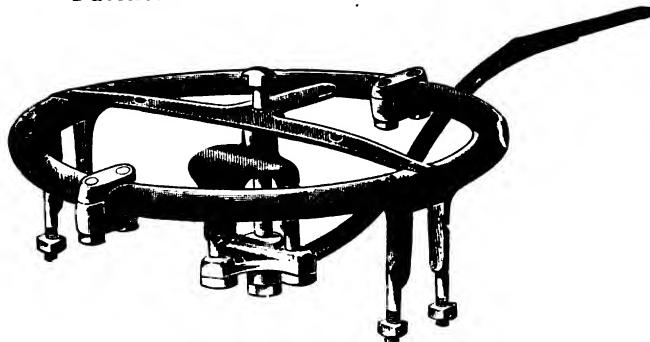
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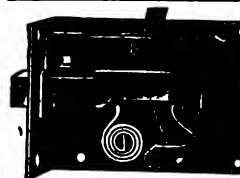
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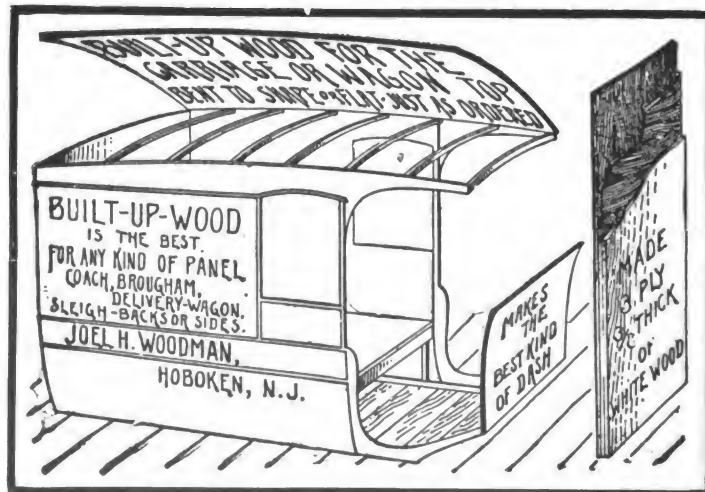
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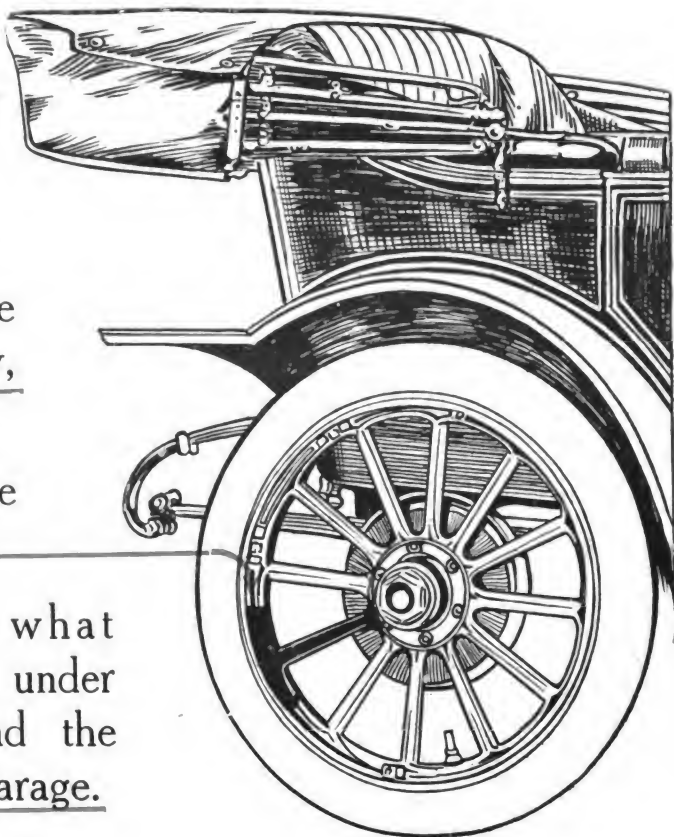
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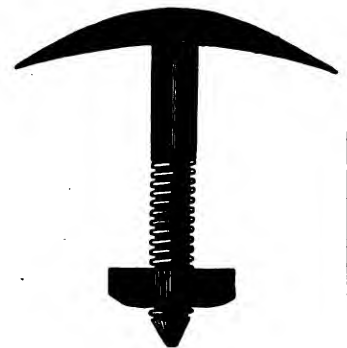
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Checks,  
Splits,  
Corner  
Breaks



Patent  
Applied For

Write for our illus-  
trated catalog show-  
ing a number of our  
other seats.

Furnished to most any width desired.

**Keystone Sheet Metal Co.**

Factory, Economy, Pa.

Office, Ambridge, Pa.

## THE FAIRFIELD RUBBER COMPANY

Manufacturers of

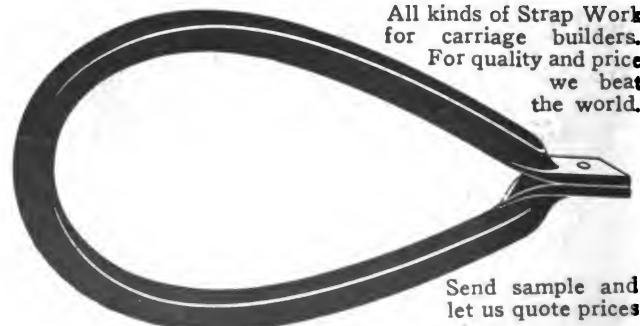
Carriage Cloth, Imitation Leather,  
Automobile Cloths, etc.

**FAIRFIELD,**

**CONNECTICUT**

## AUTOMOBILE, CARRIAGE and HARNESS SPECIALTIES

All kinds of Strap Work  
for carriage builders.  
For quality and price  
we beat  
the world.

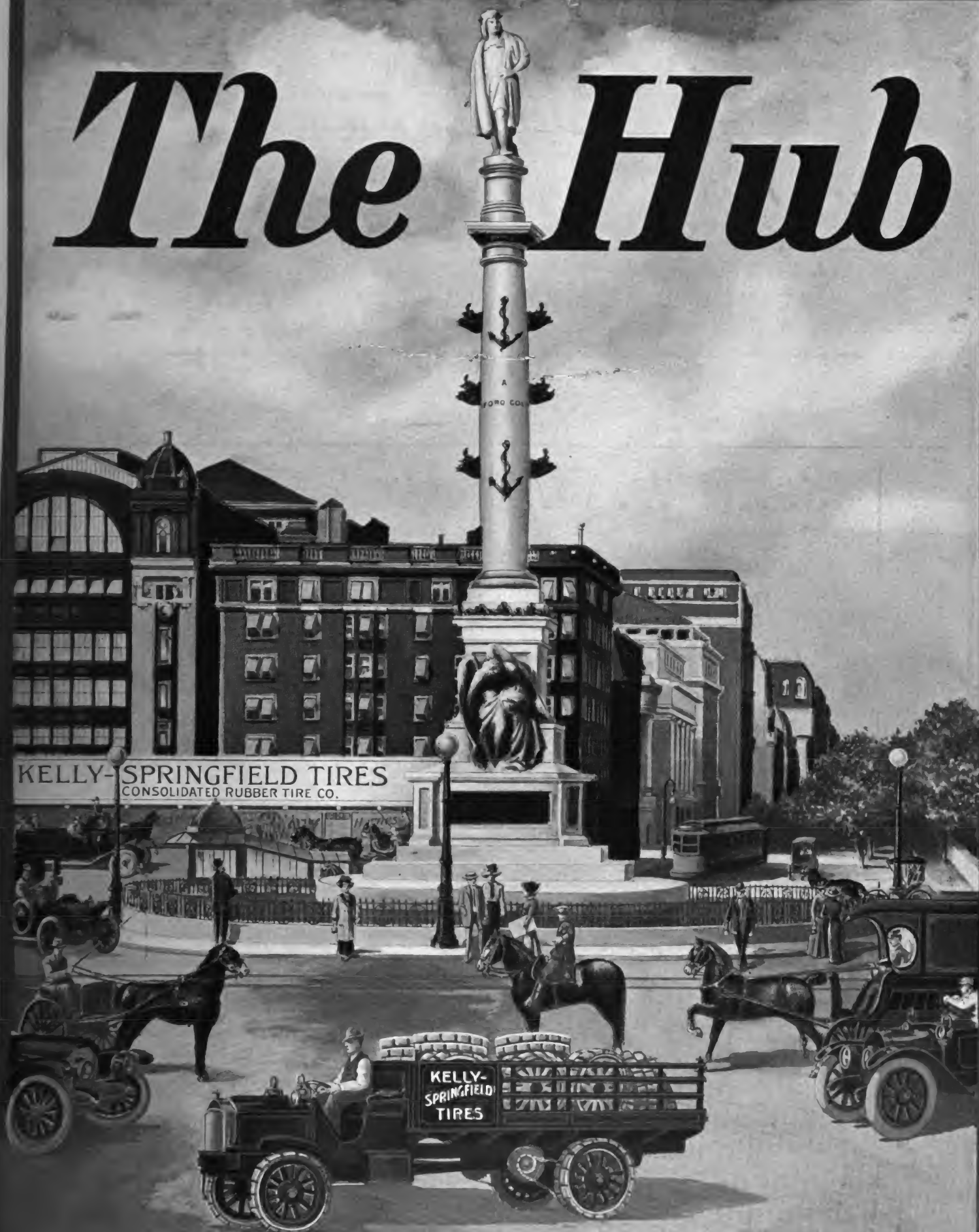


Send sample and  
let us quote prices

**J. C. DECKER**

**Montgomery Pa.**

# *The Hub*



TRADE NEWS PUBLISHING COMPANY  
24-26 MURRAY ST., NEW YORK

# Hoopes Bro. & Darlington Inc.

West Chester, Penna., U. S. A.

SARVEN

STAR or KENNY

Sweet Concealed Band

WOOD HUB

WARNER

# WHEELS

HEAVY and LIGHT  
for

CARRIAGES

WAGONS and

TRUCKS

IF YOU WANT THE BEST TRY OURS

## JOHN W. MASURY & SON

Originators of

Superfine Coach and Automobile Colors

Acknowledged the Standard for Fifty Years

AND MANUFACTURERS OF

Fine Carriage and Automobile Varnishes

New York,

Chicago,

Minneapolis,

Kansas City



## CRANE & MACMAHON, (INCORPORATED)

8-10 Bridge St., NEW YORK CITY, U. S. A.

Sole Manufacturers and Exporters of the

HICKORY NUT,  ACORN,  and STAR  BRANDS OF

Carriage, Wagon and Automobile Wood Stock

FACTORIES:

ST. MARYS, OHIO.

RICHMOND, VA.

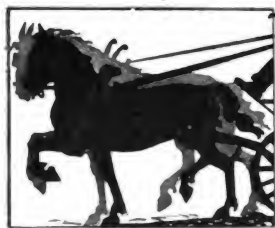
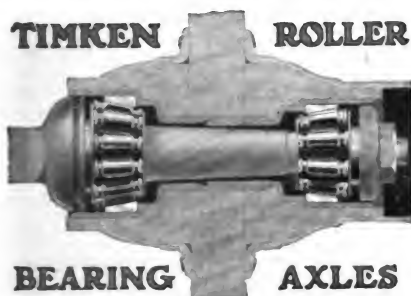
For Export Prices apply to the New York Office.

## Make more money on your axle replacements

Make it squarely too—in a way that leaves your customer feeling good over the job you've done.

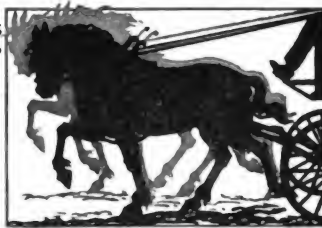
In short, do him a real favor—at a good profit to yourself.

Get him to let you install



A LIGHT horse can do the work of a HEAVY one!

These facts  
mean more  
**PROFIT**  
for YOU.



ONE horse can do the work of TWO, and TWO the work of FOUR.

Point out to him that his horses can haul much bigger loads on Timken Axles because their Roller Bearings bring friction down to almost nothing.

Tell him how reducing the draft 25 to 50 percent gets more miles out of a horse each day without wearing him out.

Show him how he saves money on grease because roller bearings need oiling only once a month—how he saves time and trouble of oiling, too.

Tell him of the wagons in your own town that have run for years on Timken Bearings.

Refer him to the owners—every one of whom will tell him they wouldn't run a wagon on any other kind of axle.

A little red-hot real salesmanship on your part will get him to say, "Go ahead and put in the Timken Roller Bearing Axle."

You'll do him a good turn because he will get big extra value for the extra price you'll charge—including an extra generous profit for you.

Your salesmanship will get you away from price competition which always means small profit.

If you need help to get all the selling points, send for our catalogue. It's free. Write for a copy today.

### The Timken Roller Bearing Company

CANTON, OHIO

New York Branch, 68th and Broadway

Chicago Branch, 1347 S. Michigan Ave.

*Timken Roller Bearings are used in a big majority of all motor cars.*

*Pleasure and Commercial Car Axles and Jackshafts with Timken Roller Bearings are made only by the Timken-Detroit Axle Co., Detroit.*

202

## VEHICLE WHEELS OF REAL WORTH



We manufacture Vehicle Wheels of All Kinds; Light and Heavy. Sarven, Warner, Compressed Band and Wood Hub. Send for our Price List.

### THE NEW WAPAKONETA WHEEL COMPANY WAPAKONETA, OHIO

Please mention "The Hub" when you write.

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## SHERWIN-WILLIAMS VEHICLE FINISHES

The principle of the construction of Sherwin-Williams Undercoating, Ground Colors, Colors and finishing coats is based on the relation of one coat to another, careful study having been given to the particular surfaces on which the material is applied. Each individual product is so constructed that it will best accomplish the purpose for which it is intended. It works well with the finishes used in other steps in the painting process, giving a completed finish which will be uniform, durable, have individuality and character.



The Sign of Quality

*S-W Body & Gear Primers*

Perfection in oil quality make them better priming coats. They penetrate the wood, seal the pores and form a substantial foundation for subsequent coats.

*S-W Metal Primers*

These Primers are elastic, extremely tenacious and dry on schedule time.

*S-W Rough Stuff*

Produces a compact, close-knit, non-porous surface. It is elastic and uniform in fineness and consistency.

*S-W Gear Fillers*

On account of fine grinding, they produce a smooth elastic filler coat. Their shade and tone make them desirable undergrounds for color coats.

*S-W Surfacers*

Intended for rounding out the surface on gears. The quality of the raw materials make them excellent sanding and intermediate coats. They bind thoroughly and are elastic.

*S-W Ground Colors*

Have the necessary opacity and shade of various colors to bring out the tone to the fullest extent in semi-transparent and transparent colors. They are noted for their fineness of grinding.

*S-W Q D Colors*

They have been for years the standard for leading coach and carriage builders. Made of original and choice colors, ground to the finest degree in Japan.

*S-W Color Varnishes*

A modern color in varnish that will flow and work easily and in harmony with an elastic finish. Offered in rich, distinctive and individual shades.

*S-W Finishing Varnish*

Varnish of the best quality. It works and flows perfectly producing a durable, elastic and full finish.

A trial has convinced many of their uniform high quality.

Send Inquiries to 626 Canal Road, Cleveland, Ohio.

## SHERWIN-WILLIAMS COLORS AND VARNISHES



ASK FOR CATALOG

No. 10. Carriage and Wagon Wheels.

No. 15. Auto and Motor Truck Wheels.

## WE HAVE—FOR FORTY YEARS MADE WHEELS OF QUALITY

¶ Our experience should be worth something to you.

¶ To buyers of wheels not already on our list of satisfied customers, we offer our facilities for producing wheels for

Carriages, Wagons, Automobies and  
Motor Trucks  
OF THE HIGHEST STANDARD OF QUALITY

STANDARD WHEEL COMPANY  
TERRE HAUTE, IND.



Please mention "The Hub" when you write.



# The Sturtevant - Larrabee Company

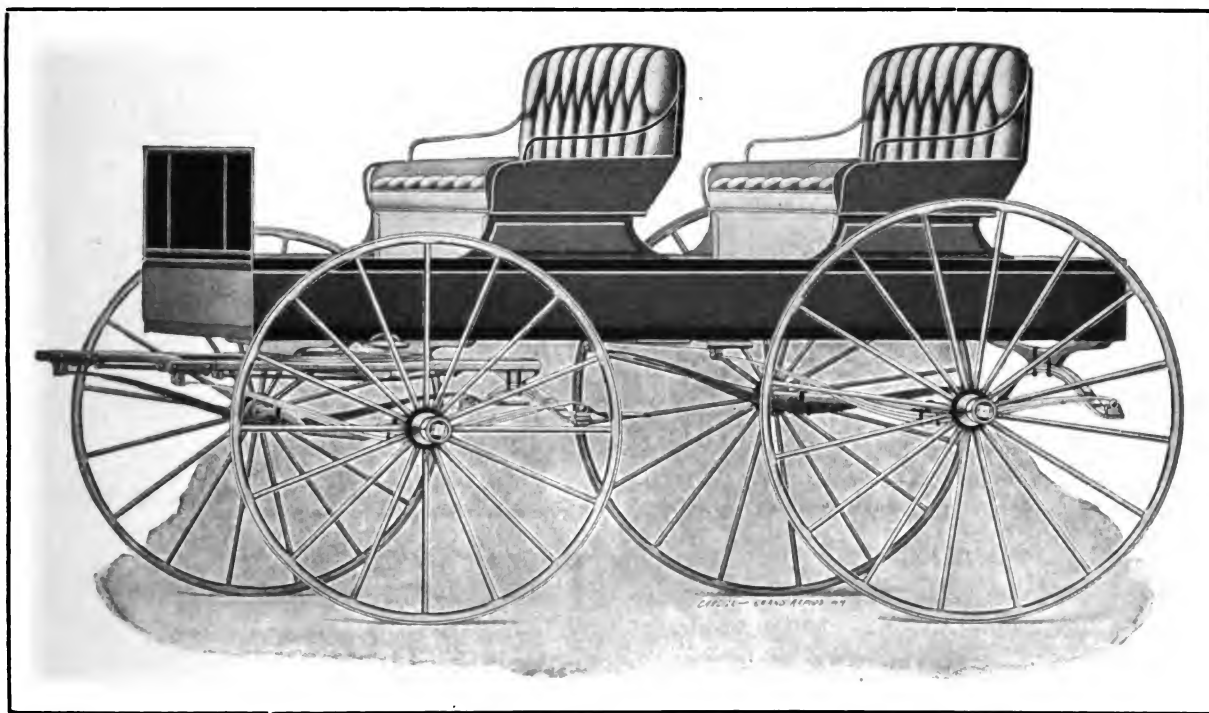
BINGHAMTON, N. Y.

## Carriage and Sleigh Builders

Let us send you our complete Catalogues showing

### **60 DIFFERENT STYLES**

of wagons and the same number of sleighs



The Old Reliable Platform Spring Wagon for all kinds of business. The style pleased your Fathers and Grandfathers and will please you and your customers. The easiest riding and most durable style ever made.

We have them with two seats also with three seats, at prices that you can sell at a profit.

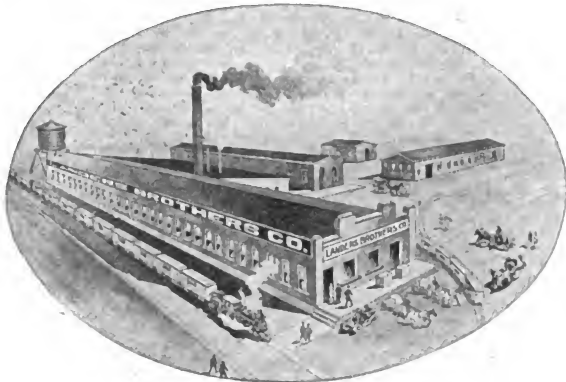
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# Buckram, Webbing,

Made in Our Factory

Burlap, Strain Straps, Celluloid



Top Material, Fibre Cord, Wadding, Enamelled Muslins, Drills and Ducks

Sheeting, Bow Lining, Cushion Canvas,

**Landers Brothers Co.,**  
TOLEDO, OHIO.

Prompt Shipments Best Goods Lowest Prices

# "BLACK VELVET" CUSHION SPRINGS

Manufactured Only by the

**NATIONAL SPRING AND WIRE COMPANY**  
ALBION, MICH. WINDSOR, ONT.

THE SPRING OF QUALITY.



SPRING or SOFT EDGE CUSHION FRAME  
For Buggies or Other Vehicles. Built of the Highest Grade of Steel Wire.



STRIP FOR WOOD OR BOX FRAME

# Take Advantage Of

REG. U.S. PAT. OFF.

# FABRIKOID

## Advertising

It Will

**Increase Your Profits**

If you have Fabrikoid in your store, you will receive many inquiries which can be turned into profitable sales.

You will receive names of inquirers replying to our advertising and asking, "Who is your Fabrikoid dealer here?"

We want you to make these sales, gain new customers and increase your profits. Ask your jobber for samples or send to Dept. 269.

**Fabrikoid Dept., Du Pont Powder Co.**  
**Wilmington, Del.**

(Du Pont Powder Co., Owner)

# LEATHER

— THAT DON'T CRACK —

That can't be distinguished from machine buffed hide.

That wears as well as expensive leather but costs much less.

Leather with these advantages is **Diefenthaler's** soft and pliable hides, and we guarantee that no oil will come out.

Made specially for carriage and automobile trimmings.

We will send sample hide for your approval without charge.

**JOHN V. DIEFENTHALER**

Hamilton, Bruen and McWhorter Sts.  
**NEWARK, - - NEW JERSEY**

# METAL BODY MACHINERY

of PETTINGELL PATENTS forms the largest, if not the entire equipment of most every automobile body plant in the United States. This surely denotes superiority of the Pettingell line. These machines are also extensively used to do first class work in getting out body stock and frame work.

WRITE FOR CATALOGUE



**NEW AUTOMATIC POWER HAMMER**

Designed and made especially for Aluminum or Metal Body Work; gives plenty of room to form or turn body panels, seats, wide backs, etc. Is designed and built to run at a high rate of speed, and the peculiar construction with springs and belts preserves the bearings, pins and screws from racking or breaking.



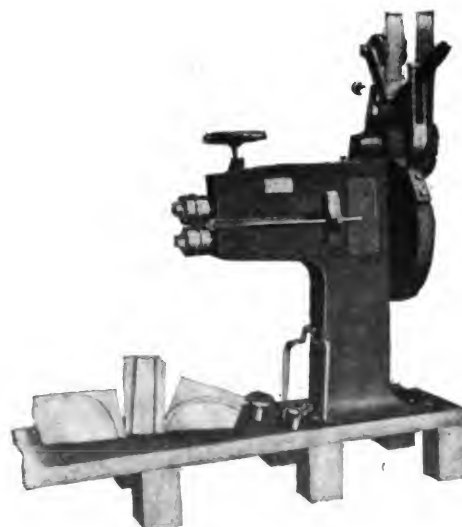
**IMPROVED METAL ROLLER FORMER.**

A solid, substantial machine, all metal, with cut gears. Will make any curve or various irregular curves on Mud Guards, Metal Panels, Seats, Etc.



**HAND MOULDING OR BEADING FORMER.**

Will form moulding or beading any size or shape, cuts all metals, will fold in wire around edge of metal and turn over flanges, etc. Intended for use in factories and shops where small machines are needed for much of the work that can be done quicker and easier than on large power machines, and also for many shops where they have not power or facilities or do not wish to put in the large, powerful and more expensive machines.



**POWER MOULDING OR BEADING FORMER**

A big improvement over any machines formerly used for forming, beading or moulding; cutting all metals; turning over flanges or folding in wired edge of metal, or any part of the work, and combines three machines in one. Adjustable every way and quickly changed for any work. Designed and built to handle all kinds of metal, aluminum, sheet steel, copper or tin.

**THE PETTINGELL MACHINE CO.**  
**AMESBURY, - - - - - MASSACHUSETTS**

Please mention "The Hub" when you write.

Quality  
Is  
Economy

*Palest Durable Body  
Saves Money to the Owner--  
How about the Builder?*

There's no sort of question about the Economy of this *Most Durable Carriage Varnish* for the man who pays the re-varnishing bills.

The question for the Carriage Builder is whether it pays him to help the Owner save money—will the favor somehow be returned?

Well, now, is it a *question*? Hasn't it been settled, by all business experience, that *Special Value* is *doubly repaid* by *Good Will*!

Surely it has been settled that a Manufacturer *cannot afford* to put his Customers, or his Dealers' Customers, to needless expense.

We find that it pays us mighty well to put *extra* money into our Varnishes, that varnish users may *save* money on them.

The Varnish

That Lasts

Longest

**Murphy Varnish Company**

FRANKLIN MURPHY, President.

Associated with Dougall Varnish Co., Ltd., Montreal, Canada

NEWARK,  
N. J.

CHICAGO,  
ILL.

## THE TRADE NEWS PUBLISHING CO. OF N. Y. Publishers of THE HUB

J. H. WRIGHT, *President.* G. A. TANNER, *Secretary and Treasurer.*  
24-26 MURRAY STREET, NEW YORK.

Other Publications of Trade News Publishing Co.:

HARNESS (monthly) ..... per year, \$1.00  
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THE HUB is published monthly in the interest of employers and workmen connected with the manufacture of Carriages, Wagons, Sleighs, Automobiles and the Accessory trades, and also in the interest of Dealers.

Subscription price for the United States, Mexico, Cuba, Porto Rico, Guam, the Philippines, and the Hawaiian Islands, \$2.00, Canada, \$2.50, payable strictly in advance. Single copies, 25 cents. Remittances at risk of subscriber, unless by registered letter, or by draft, check, express or post-office order, payable to the order of TRADE NEWS PUBLISHING CO.

For advertising rates, apply to the Publishers. Advertisements must be acceptable in every respect. Copy for new advertisements must be received by the 25th of the preceding month, and requests to alter or discontinue advertisements must be received before the 12th day of the preceding month to insure attention in the following number. All communications must be accompanied by the full name and address of writer.

### FOREIGN REPRESENTATIVES:

FRANCE.—L. Dupont, publisher of *Le Guide des Carrossiers*, 78 Rue Boissière, Paris. Subscription price, 15 francs, postpaid.  
GERMANY.—Gustave Miesen, Bohm a Rh. Subscription price, 12 marks, postpaid.  
ENGLAND.—Thomas Mattison, "Floriana," Hillside Avenue, Bitterne Park, Southampton. Subscription price, 12 shillings, postpaid.

## Technical School.

The closing of the Technical School for Carriage Draftsmen for the season, and the illustration and account to be read on another page, suggest reflections.

This school was proposed in the first instance by a distinguished member of the accessory trades, who backed up his proposal by a most substantial donation, to which he added other sums at other times. It was mainly supported by voluntary contributions coming through the accessory trades, and although at first blush, it might seem such donors could derive little benefit save the consciousness of a public duty well performed, as a matter of fact the school has returned to them a rich reward for their well-doing. We don't believe a diagram will be needed to prove this contention, but if thought otherwise, we can supply it.

It was a brave struggle on the part of the Carriage Builders' Association to keep the school running. It was housed in catch-as-catch-can places for a while, for a great while, but all the time the product was pretty near a hundred per cent. good. This has been due to the instructors and the men who guided its destiny. A group of more self-sacrificing men we would not know how to select.

There has always been something about the school

that has inspired just the finest work by all interested.

The late Prof. Gribbon was such an enthusiast that he not only gave of his time, but passing away, left of his earthly goods a portion for the benefit of the school. Who ever heard the like before in a technical school teacher?

The present incumbent of the professorship is a gentleman just as enthusiastically devoted, giving much more of his time than he is recompensed for giving, because he works for the school in his vacation time as well.

Those in the direction were just the same fine fibre, instance the late John W. Britton, the present Charles Richter and D. T. Wilson, not to add the Messrs. Ogden, Franklin Murphy, and so on. It is wrong to mention only a few when all have done their appointed work so finely.

Now, what has the school done?

It has induced bright, but callow young mechanics to mix brains with the cunning of their hands and become skilled designers. In about every instance they have made abundantly good. Just look over the school alumni and the argument is closed.

We can't remember offhand just how these young gentlemen were placed in their chosen vocation, but we call to mind that of recent graduates Mr. John Dobben is head of the drafting department in the Pope Mfg. Co.; that George Klix is there also, that the fine Packard work is due to a graduate, and lots more we can't call to mind.

This school has been a life saver to the automobile concerns that could not distinguish a vehicle body from a tire cam (and there are some of the same kind still on the map), and much of the advance in the use of refined accessories was due to the initiative of those bright young men, which is where a big dividend was paid on those from time to time contributions.

Like good wine, the school is improving with age, but more of an endowment would make it improve faster.

## Automobile and Good Roads Advocate.

This is the name of a new journal issued in Jacksonville, Florida, whose initial number, May, is very much to the point of its mission. We are sure it will find its accepted work, and serve a useful purpose in aiding the movement for a nation-wide improvement of highways.

## For Governor of Indiana.

Friends of Col. Charles A. Carlisle, of the Studebaker corporation at South Bend, who are urging him to become a candidate for governor on the republican ticket, are

rejoicing at the sweep of a movement set afoot last fall to induce the South Bend man to announce his candidacy. They believe that if he would accept he would carry the state, though he has never held office and says he never expects to.

### Castigation by Mr. Grant Wright.

Mr. Wright, who is the whole thing in the Eastern Implement Dealer, is a most picturesque, if sometimes grotesque, personality, with very strong likes and dislikes which he generously shares with his readers.

One of his pet aversions seems to be Mr. Green, of Auburn, Indiana, an erstwhile journalist, formerly the guiding light of *The Spokesman* in its halcyon era, but later connected with *The Hub*. Mr. Wright uses a recent editorial in *The Hub* with which to wallop the aforementioned Green.

If Green were the harvester Trust (we use the lower case c and the cap. T to better exploit Mr. Wright's way of thinking in print) he could not be more severe or epigrammatic in the Wrightesque manner.

Mr. Wright is a good enemy or a fine friend. Like Saint Paul he is "all things to all men"—but here the parallel between the Saint and Mr. Wright abruptly stops.

*The Hub* knows now how the harvester Trust must feel, and how natural it will be for it to prepare to unbelt and yield up those two pages of advertising, if only for the altruistic pleasure of correcting a certain astigmatic fault of vision that sometimes bothers the brilliant editor.

We do not believe the harvester Trust would be so impolitic as was Job when he exclaimed, "Doth the wild ass bray when he hath grass to eat?"

### John Wesley on Good Roads.

"I was beholden of the truth that farmers who live along a good road get rich, while those who are on a bad road are usually very poor."

### Price of Rubber.

The 1911 maximum price for fine Para rubber was \$1.70 per pound. In 1910 same grade was quoted at \$3.04.

The lowest price reached was 98 cents, against \$1.35 in 1910.

The price of tires did not fluctuate.

### A Technical Digest.

For a change we have tried to make this issue a fair reflection of current thought in all departments of endeavor covered by this journal.

The best the market affords in thought, design and suggestion has been the aim.

The vehicle centers of the world have been the sources of inspiration as far as possible.

We hope our readers will find the work interesting and provocative of ideas.

### Cheap Crude Rubber.

W. Wright, the rubber statistician, and other authorities are assuring those interested that crude rubber will be so plentiful as to be a very common product soon.

As much as sixty thousand tons is put down as the yield of the Malay region not later than 1916, some say sooner. This would be, we are told, about three-fourths of all the world's supply at present.

It is claimed that Ceylon and Malaysia will grow more rubber than the whole of Brazil and Central America has yielded in 1911.

Three seems to be nothing quite so stimulating to increase a product as an active speculation and a high price. Since the rubber boom on the English stock exchange the rubber grower has been planting and cultivating in all directions, and rubber has been produced in trees, shrubs and plants never heretofore accused of harboring anything so valuable and expensive.

When the crude stock is pressed for sale it ought to modify the tire prices in a remarkable way in a little while thereafter, especially when all become convinced that supplies will be staple and always in demand.

However, we must not count our chickens too eagerly. There is the modern method of merchandizing to be taken into account. Some shrewd, almond-eyed gent may come forward with a "valorization" proposition to hold back supplies while shoving forward price. And that would be different, you know. Coffee is most plentiful at the present time, but the price is very exclusive, moving in the highest circles. The same could happen to rubber. However that turns out, there will sure be plenty of crude rubber, and we hope the tire maker will be one of its beneficiaries.

### Georges Pauwels.

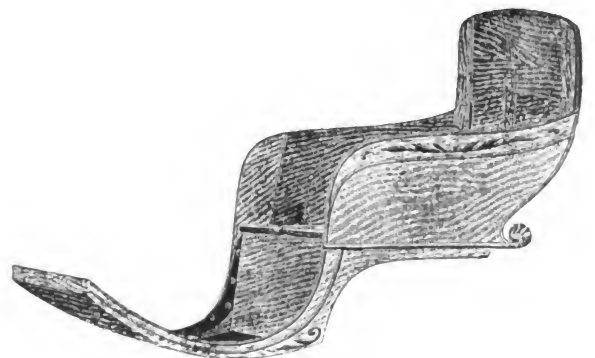
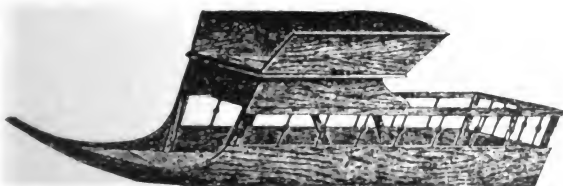
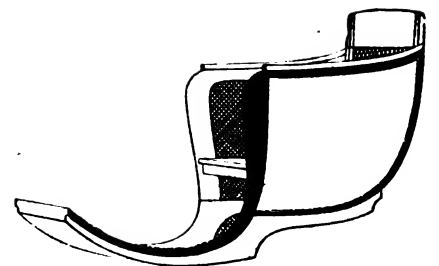
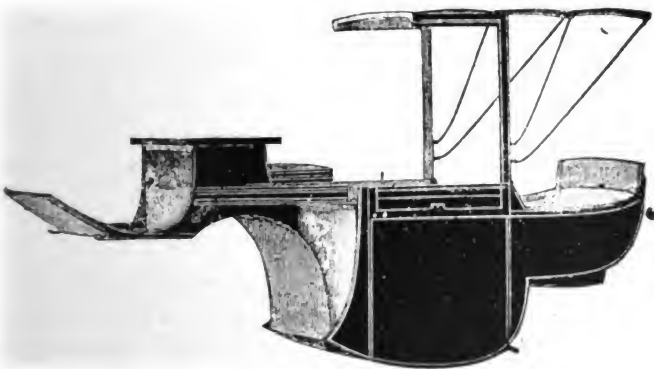
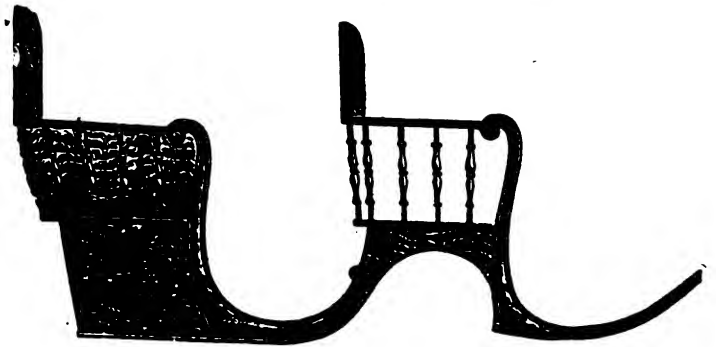
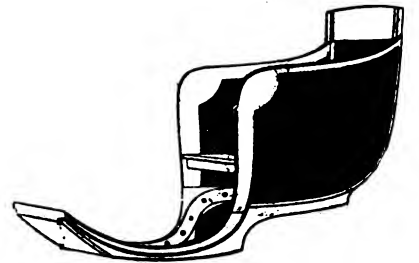
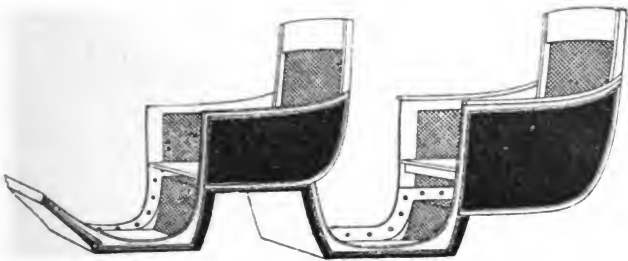
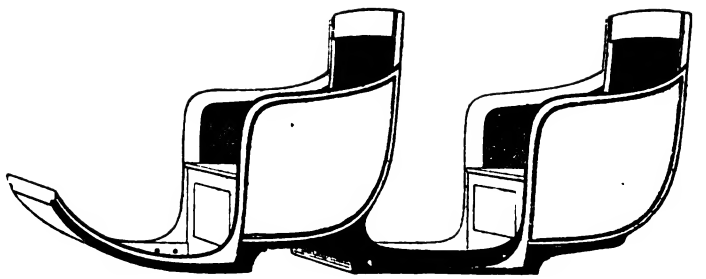
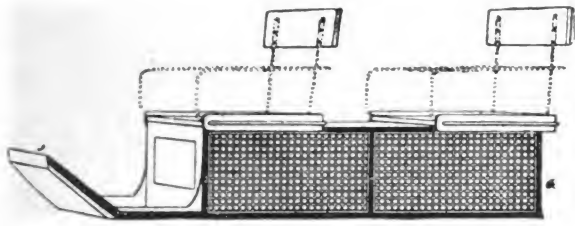
M. Pauwels was a director in the Million-Guét factory in Paris, and a man of great administrative function. He was the head of *Etablissement de la Carrosserie Industrielle*. His death at the age of 48 is most regrettable.

### CONNOLLY FOR CONGRESS

Mr. Maurice Connolly, of Dubuque, a member of the Carriage Builders' National Association, is to stand for election for Congress from the Dubuque district. What follows is from the local paper:

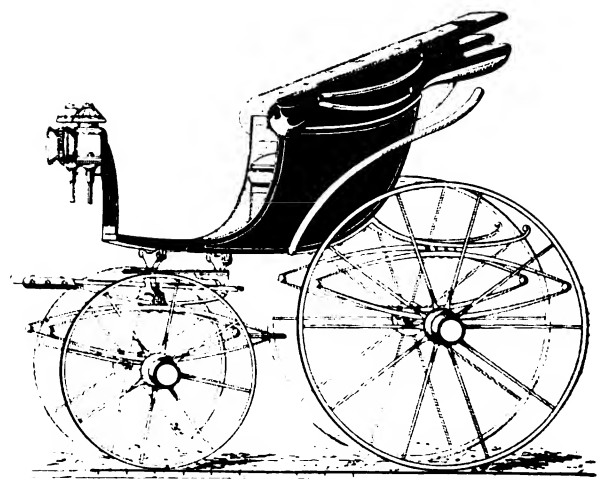
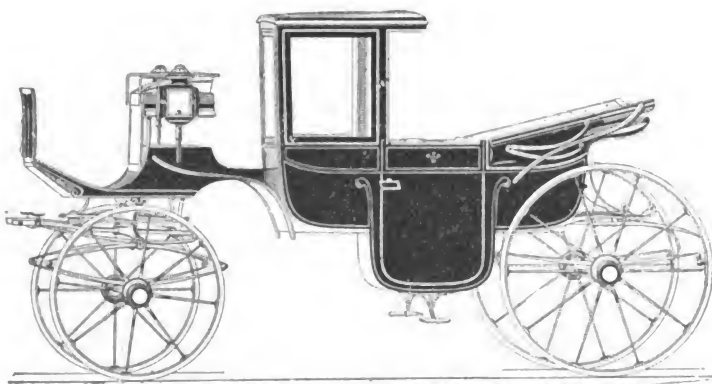
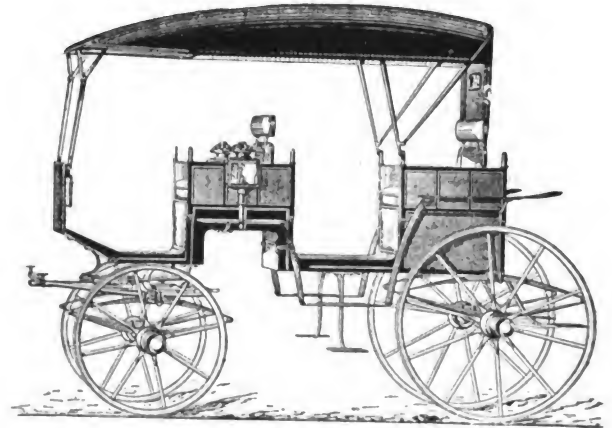
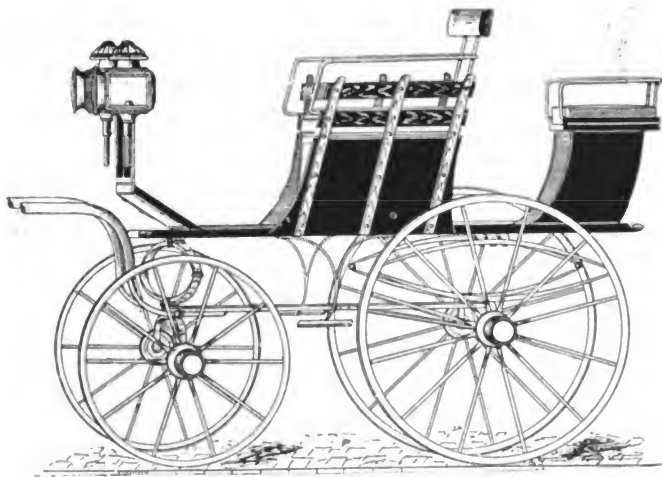
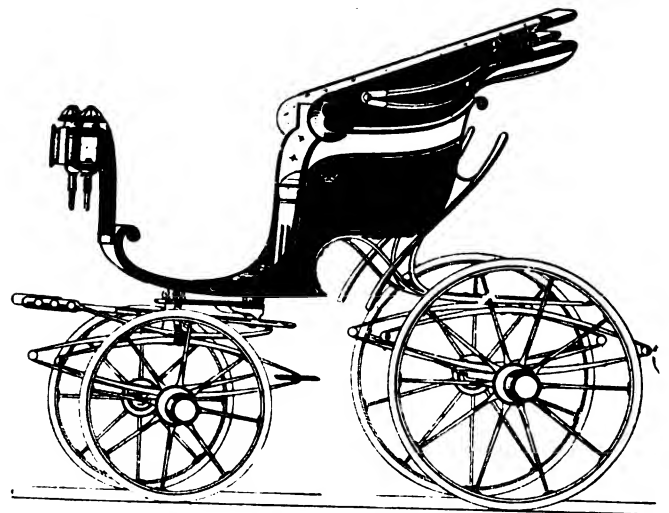
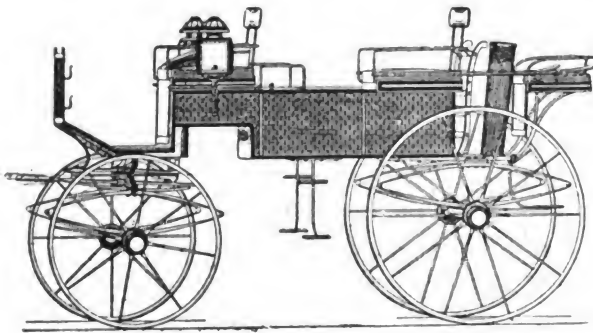
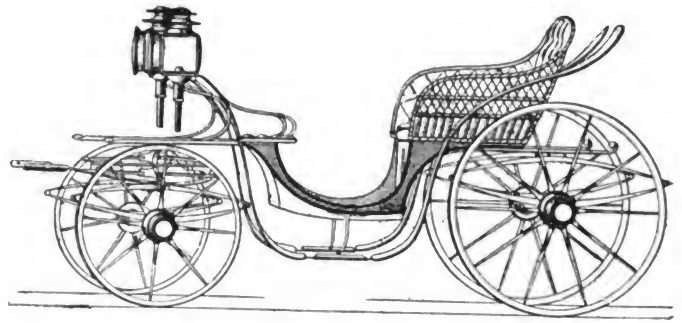
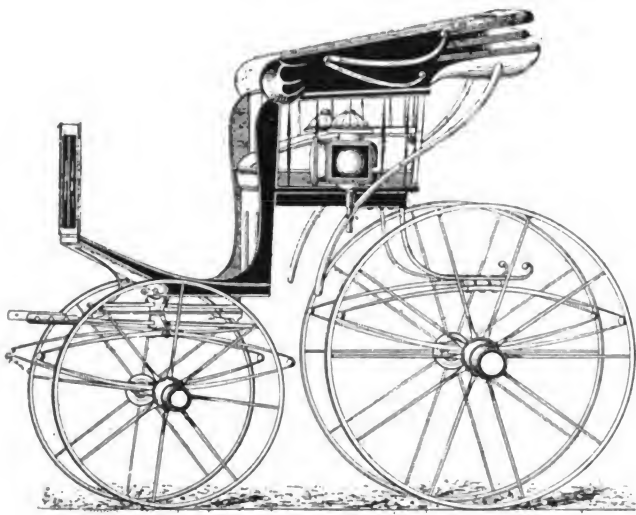
"Democrats in Dubuque and the district have sought for several years without success to persuade Mr. Maurice Connolly to stand for some office of dignity and honor. There has been frequent coupling of his name with the congressional nomination, but not until last week did the pressure upon him become so strong as to compel him to yield assent to the use of his name.

"Mr. Connolly is perhaps without a superior in the whole country as an after-dinner speaker. A graduate of several universities, he has an equipment of education such as possessed by no other man who has run for Congress in this district since its creation. Of clean life, high integrity and considerable business experience there is no valid objection which may be raised against him. His views regarding the policies of government he doubtless will set forth exhaustively at some future date."

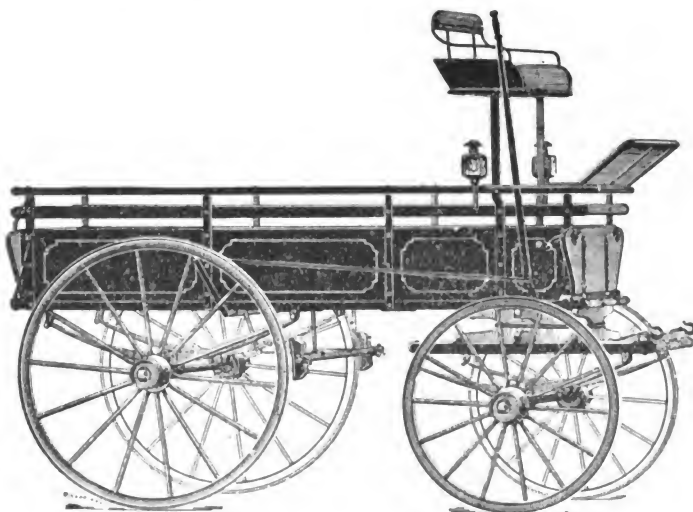
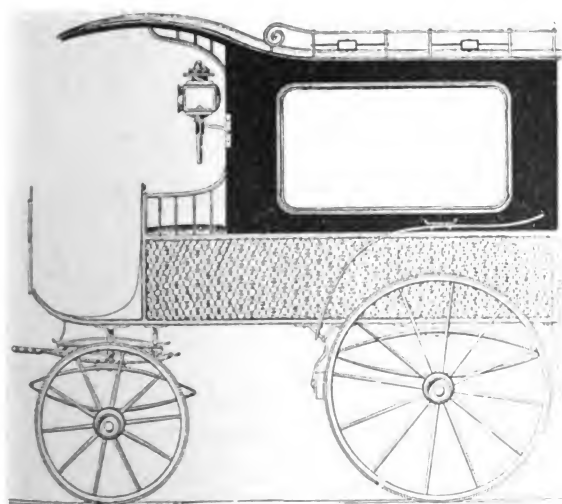
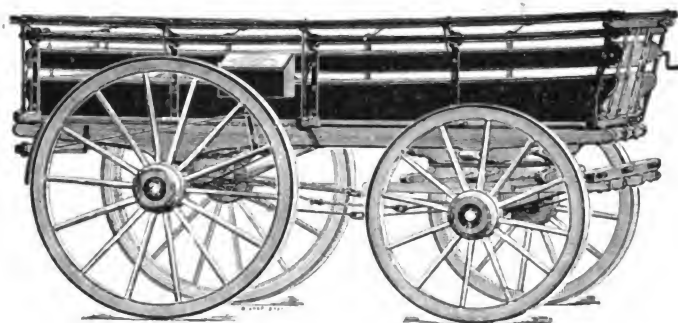
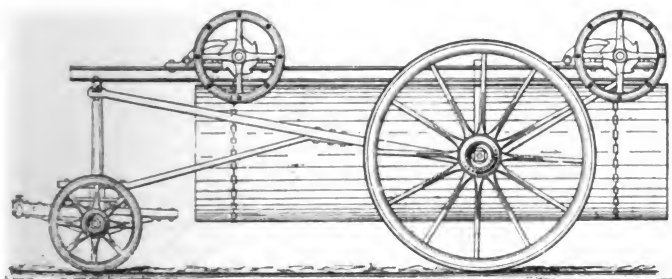
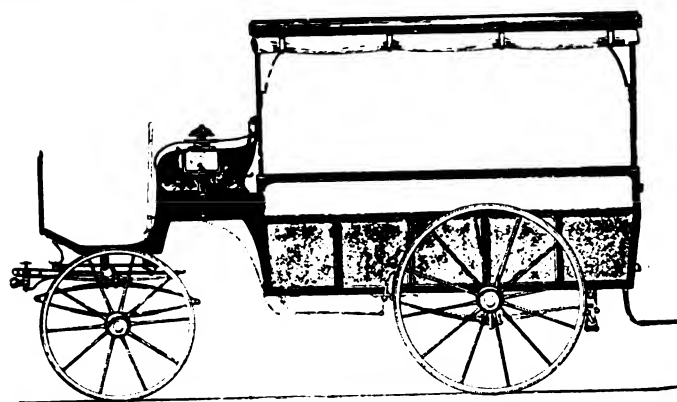
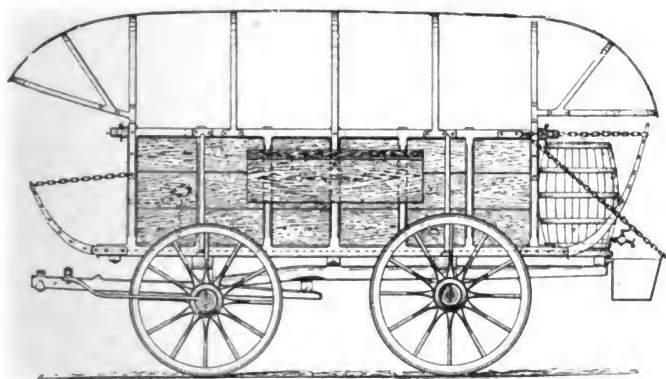
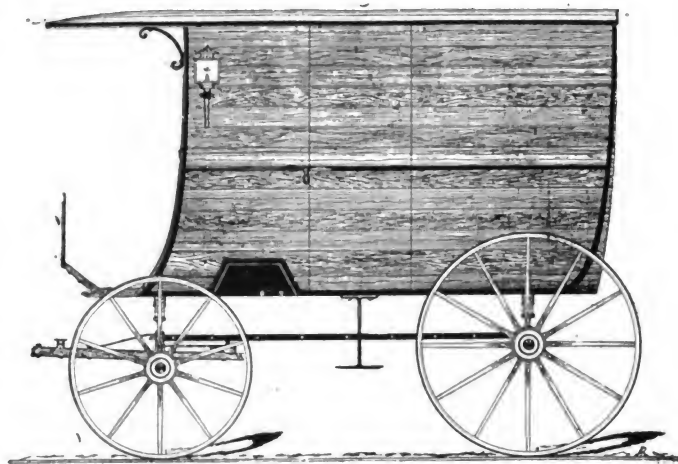
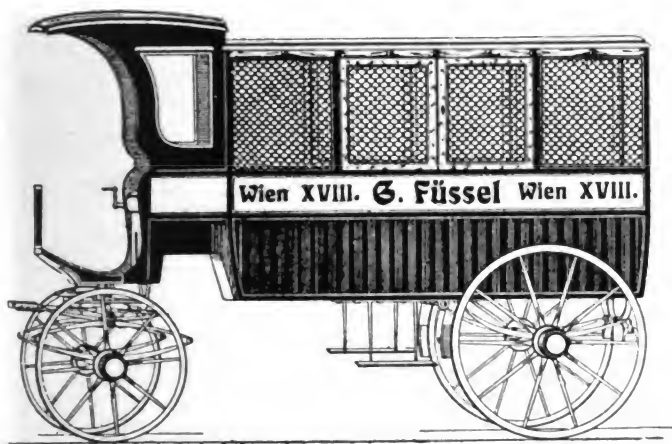


RECENT FOREIGN IDEAS FROM ALL SOURCES

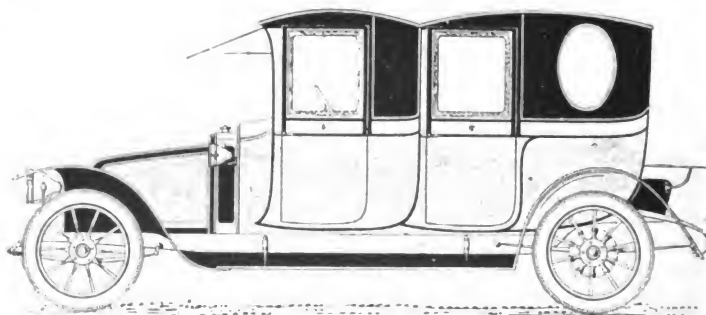
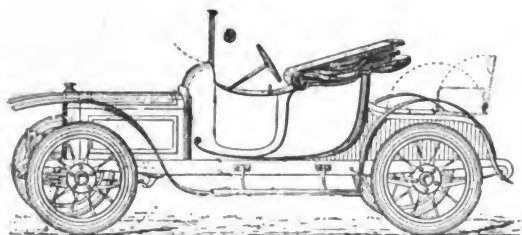
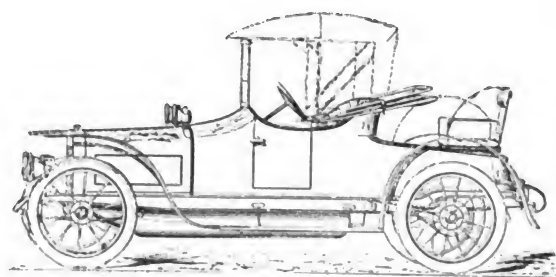
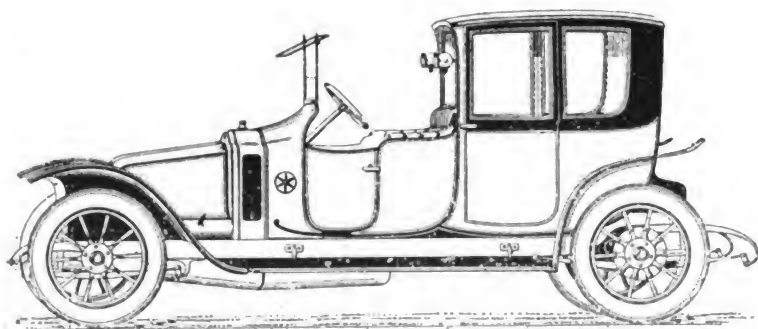
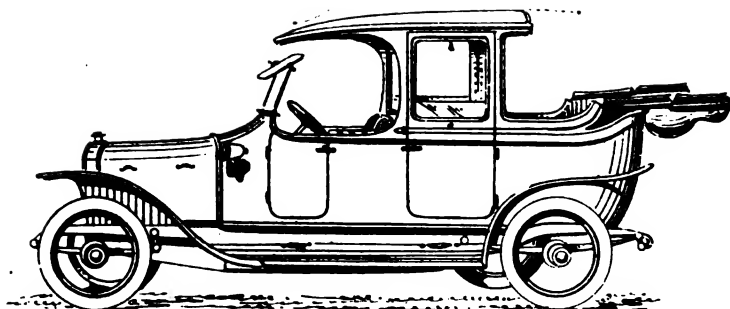
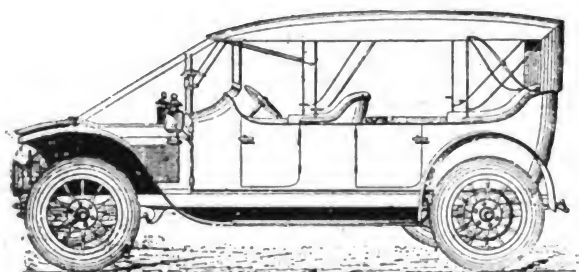
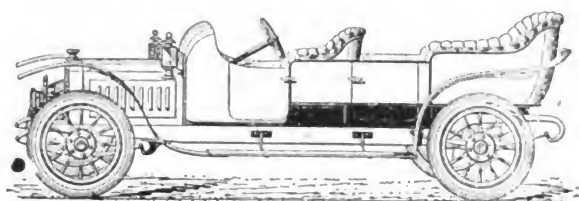
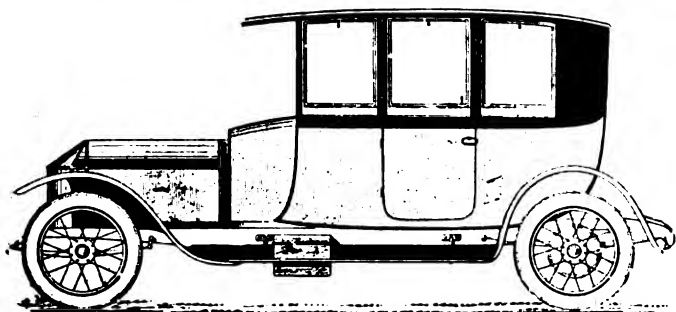
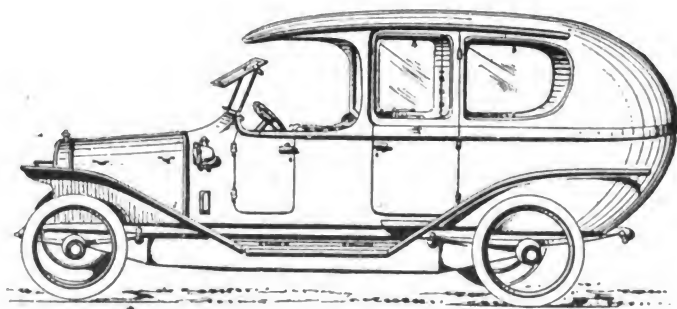
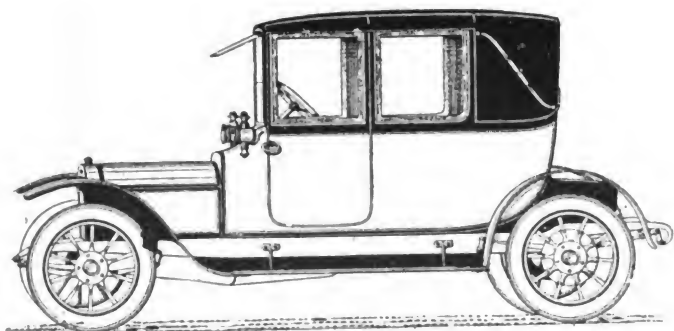




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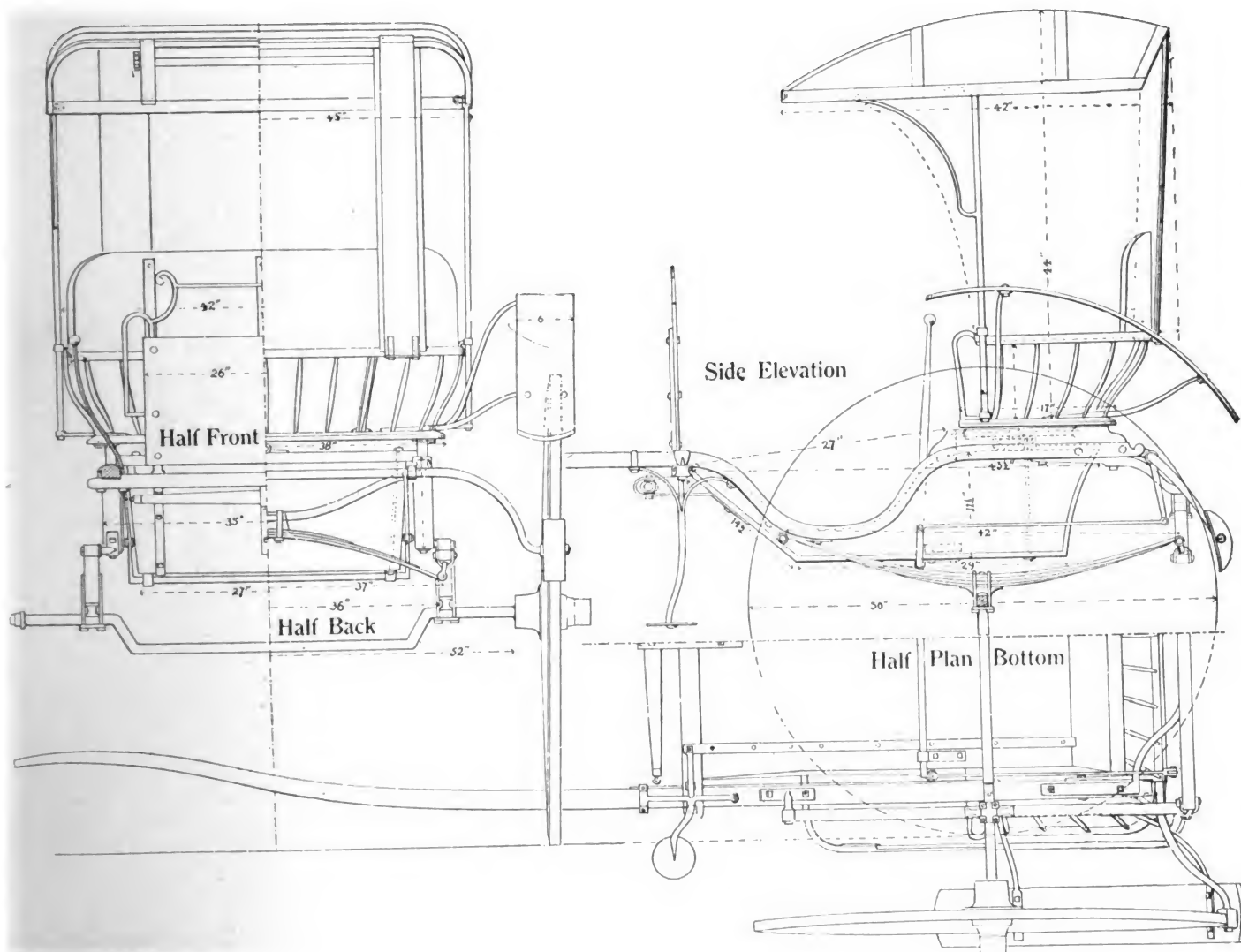
# Wood-working Shop.

## WORKING DRAFT BRISBANE SULKY

This pattern is in almost universal use, says the Australian Coachbuilder and Wheelwright, to which we are indebted for the draft, which we present as a matter of curious interest to readers. It is made by all leading coach builders, with slight modification in design, and is a favorite vehicle with livery stable keepers. The two main deviations from old patterns are, the introduction of a cranked axle, and a canopy top with spring roller blinds for side and back hood curtains. In a

suspended by means of two long bolts, as shown in dotted lines, side elevation. This cross bar also takes the middle bearing of seat shifting screw. The seat brackets are  $1\frac{3}{4}$  inches deep, with the usual flat slides. In some cases round iron slides are used instead of the wood brackets. The front of the tray is attached to the shaft cross bar, as usual, by means of two  $1\frac{1}{8} \times \frac{1}{4}$  inch plates screwed underneath the body. The seat is a standard 38 inch "comfort" pattern.

The brake lever is made to operate by hand only, but a foot piece can easily be added if desired. To simplify the fitting and



Working Draft Brisbane Sulky

warm climate the latter are very convenient, as they can be drawn down to any distance required. The body is made separate from the shafts, and has a straight bottom running back over the axle, which is set down sufficiently to give clearance for the movement of the springs. This design appears to better advantage in pony and medium sizes.

The shafts are the ordinary cradle pattern, with about 10 inches drop over all. They are plated with a  $1\frac{1}{4} \times 1\frac{1}{4}$  inch half-round plate on inside edge at the bend and along to the clip over the front stay of step. A wood bar about  $5 \times 1\frac{1}{4}$  inch connects the two shafts under the seat; from this the tray is

working of the brake, the span iron for back spring is made with a double sweep, as shown in side elevation, and the connecting rods work inside the shafts, not outside as is usual.

The canopy top is made up of four bows, the front one being on the horizontal, forming a round cornered rail. Two battens connect this rail with the front upright bow. The canopy is supported at the back by two stays made of  $3\frac{1}{2} \times \frac{1}{8}$  inch band iron, let into wood battens  $5\frac{1}{2} \times \frac{1}{2}$  inch, which are dressed to a feather edge and afterwards covered with duck or leather to represent the ordinary hood stays. At the sides it is supported by  $\frac{3}{8}$ -inch round iron stays as shown. The back stays



are fixed at the bottom by means of two small strap bolt ends riveted to the band iron, which at the top is turned over and secured by screws through the back bow. The canopy is removable. In trimming, the material on the back stays is brought round the corners at each side so that they will lap over the spring roller blinds, which are attached inside at back and sides. The principal measurements not set out in the drawing are as follows:

Axle—diameter of arms,  $1\frac{1}{8}$  in.; between collars, 4 ft. 4 in. Wheels— $1\frac{5}{16}$  in. spokes; diameter 4 ft. 2 in. Springs—side, 4 plates,  $1\frac{1}{2} \times \frac{1}{4}$  in.; centres 3 ft. 6 in.; back, 3 plates,  $1\frac{1}{2} \times \frac{1}{4}$  in.; centres, 3 ft. 1 in. Shafts— $2\frac{1}{8} \times 1\frac{1}{2}$  in.; bar to points, 5 ft. 10 in.

### KINKS FOR THE CRAFTSMAN

Every woodworker discovers little short-cuts in his work which materially help him to attain rapidity and perfection.

In measuring with a rule tip it on edge so that the dimension marks are adjacent to the piece being laid out, and in taking a series of dimensions, start from one point only; do not move the rule from one mark to the next.

In setting a gauge, do not rely upon the scale on the beam, but always test with the rule, the end of which can be placed against the head of the gauge, and the dimensions run to the spur.

Always tip a plane on its side when laying it on the bench so as not to dull the iron. For the same reason, always raise the plane from the work on the return stroke.

In planing end grain, never run the plane entirely across the end, but work from both edges toward the center of the piece. This prevents the splitting of corners.

In using an oil stone, there are three things to observe: (a) Use plenty of good oil; (b) clean the stone well before putting it away; (c) use the entire face of the stone, not merely the center. If these precautions are taken a stone should cut perfectly for years.

In sharpening plane irons and chisels, always rub on the bevel and never on the back, as this must be perfectly straight at all times to insure perfection in cutting.

In boring, never bore entirely through a piece, but reverse the piece and finish the hole from the other side after the worm penetrates.

Do not drive a screw into a board with a hammer, as its holding qualities will be greatly lessened.

Always drive nails and brads at an angle, as they will then hold more securely.

In sand-papering, always use a block if possible, as this will prevent rounding edges where they are not wanted.

Sand paper should be used for cleaning and smoothing purposes only; do not depend upon it for doing the tool work.

Sand papering should not be done across grain.

### IMPROVEMENTS IN WOOD-CUTTING TOOLS

The chain-feed tenoner, the continuous-feed jointer, face planer, panel raiser, cut-off saw, sander and sticker, are examples of some of the latest tools equipped with the endless-bed features, and who knows how soon we may go back to the endless-bed planer? writes D. B. M., in *The Wood-Worker*. For simplicity in operation, good work and vastly increased output, the machines referred to have demonstrated that this form of feed is one of the really meritorious recent improvements in connection with wood-working tools, and that it should be applied to all machines wherever possible.

Spoiled stock and defective machine work are due in a great measure to improper, jerky feeding devices. No matter how well a machine may be constructed otherwise, unless the feeding mechanism is positive and continuous, all other features count for little. If, in addition to improved methods of feeding, some change in the construction of heads and cutters could be

devised that would prevent destruction of stock by chipping and tearing out, the operation of wood-working machinery would become a pleasant task instead of a continual source of trouble.

Round heads, thin steel knives, jointing devices, back grinding, and many other ingenious and complicated expedients have been resorted to with more or less success, especially on flat surfaces.

### COACHBUILDERS' TIPS, ENGLISH STYLE

What is the most usual percentage to give chauffeurs and coachmen as gratuities for services and recommendations yet to be rendered? asks Cooper's Journal. Something between  $1\frac{1}{2}$  and 2 per cent. would appear to be the usual gift. On a limousine body running into \$1,250, three or four golden sovereigns appears to satisfy the most aristocratic of gentlemen's servants, and if calls are made between the signing of the estimate and the final delivery, the cigar box comes in handy, with, maybe, an occasional thirst to be considered. If some consider 2 per cent. a high rate of generosity, it is comparatively mean by the side of that paid away to the agent and others, and, if only the carriage builder can train himself to look at it in that light, it will be seen he is far better off in giving a "fiveer" to a chauffeur than allowing a discount to another firm, which may often be five times that amount. The old custom of sending coachmen a present at the beginning of the year if they were too shy to come for it is no doubt dying a certainly not violent but a painless death.

### THE RARE METAL VANADIUM; ITS ACTION

Vanadium was discovered in 1830 by Nils Gabriel Sefstrom, and is described as a "silver-white metallic element, rare, difficult of extraction and of no value by itself, though certain of its salts yield intense, permanent black colors." It is found combined with vanadinite and other rare minerals, and though the principal sources of supply are Colorado and Utah, Peru also yields small quantities and still smaller quantities come from Russia and Arizona.

The value of vanadium is due to the fact that, introduced into steel, it combines with the carbon and iron to form a permanent carbide, which not only statically strengthens the steel, but also, which is of much greater importance, intensifies and accelerates the hardening qualities to a remarkable extent. It also confers great toughness and endurance on the steel. Though for some time after the introduction of vanadium into the metallurgy of steel it was believed that its action was that of a purge, or a flux, or a scavenger of nitrogen and oxides, such is not the case, says S. G. Stafford.

"Investigation and experiment soon disproved this idea," he says, "as it soon was found that the beneficial results obtained bore a direct relation to the amount of vanadium that remained in the steel, and that the returns were greater the less scavenging the vanadium was called upon to do. The percentage of nitrogen and oxygen in steel is a condition dependent entirely upon the melting. The higher the temperature of the molten bath, naturally, the more gases it will contain, and in order to avoid an injurious percentage of nitrogen and oxides in steel, it is necessary to control carefully the melting temperature. While poorly melted steel can be improved by sacrificing a large amount of the vanadium added, it is by no means equal to melted steel into which the greater portion of the vanadium added has remained as a constituent. With steel that has been carefully melted, the loss of vanadium is very slight.

"It also has been found that very much higher percentages of vanadium than originally proposed produce increased beneficial results. This has been amply demonstrated in the case of high speed tool steels where the percentage of vanadium has been generally increased from one-quarter to three-tenths of a per cent. to about one per cent."

# Paint Shop.

## DESIGN IN STENCIL WORK

Arthur Louis Duthie, in *The Decorator*, says one of the most important elements in design is that which we know as contrast—it shows itself in a multitude of different ways. Contrast in color, contrast in line, contrast in scale or in mass—with numberless variations and modifications.

Nowhere is contrast so much overlooked and neglected as in design for stencil work. In Fig. 1 I have suggested a stencil design of a type which is not only too common among "stock" stencils. What is wrong with it? In the first place the masses, the different spots of color, are too equal in size, do not show sufficient contrast. In the second place there is not sufficient contrast between the masses of ornament and the width of the ties. In other words the ties are too wide. I am aware that wide ties are very much stronger than narrow and therefore are likely to last longer, but in many cases they could be reduced without affecting their strength very much. This is the most common fault with stencil work, so common that it may almost be looked upon as characteristic of it, but there is absolutely no reason why it should be so. We must see to it that without sacrificing strength altogether we keep the ties narrow enough to show contrast with the smaller masses.

Fig. 2 gives a design in which the ties do show a reasonable contrast with the masses, but here we have another fault—the masses themselves are too equal, and the pattern loses interest



Fig. 1



Fig. 2

accordingly. Fig. 3 shows the same design modified to introduce contrast in mass, and gains very decidedly in interest. The value of contrast in the width of the ties themselves is indicated in Fig. 4.

Fig. 5 is an example of a "background stencil," where, instead of protecting the background we protect the ornament and paint the background, and shows considerable contrast both in mass and ties. Here we have an excellent opportunity of taking up the whole question of ties. The term "ties" originated in the necessity of connecting up the mask of paper which forms the outline of the design, and when the design is at all unsuitable for stencil work, the "ties" become very obvious and intrusive. There are many forms of ornament which simply cannot be stencilled because of the necessity for ties destroys all the character. The ability to draw ornament, the forms



Fig. 3



Fig. 4

of which can be cut without the use of arbitrary ties, is one of the first requirements in the designer of stencils. The ties must harmonize with, and actually form part of the ornament—so much so that in a good stencil it is practically impossible to say which parts can be called ties. In this example of background stencil the ornament might be said to be formed entirely of ties.

Painting out of ties should never be necessary. It disguises

the means by which the work has been done, and there is no reason why a stencil should not proclaim itself as a stencil. And it is comparatively an easy matter to design ornament in which no arbitrary ties are necessary—that is, ties which are put in merely for strength, and which cut across the design. All ties should be so designed that they add to the ornamental effect as well as to the strength. In Fig. 4 the three horizontal



Fig. 5



Fig. 6

ties which cross the elliptical shape are a distinct gain from an ornamental point of view—one would miss them if they were omitted.

The requirements of the process must be kept in mind all the time, and only such ornament used as can be adapted to the process. Where certain forms become too large to be strong they must be crossed by other forms, the outlines of which will act as ties, as in Figs. 4 and 6. Here again in Fig. 6 the value of contrast is clearly shown in the comparative sizes of the large leaf and the narrow tendril which twines around it.

## THE COUNTRY PAINT SHOP

If you are living in a part of the country in which the prices are cut to pieces, I am going to tell you how to do a revarnish job reasonably cheap, and how to do it well, says W. A. Riggleman, in *American Blacksmith*. You may try the four following methods if you are in a cheap place, and whether your paint shop is large or small will make little difference.

All the jobs look like tough propositions when they are brought in, and look as if they needed painting, but the customer merely wishes them revarnished. After the vehicle is unhung and ready for work, start on the body, rubbing down the old varnish with fine pumice and water. Clean thoroughly and let it dry. Do not touch up, this time, but give the body a solid coat of black solid covering color varnish. When dry, rub down as before, touch up, if need be, and then finish.

For the gear on this revarnish job, simply sandpaper lightly and apply a coat of solid covering color varnish. You can get any color in this varnish. When this coat is dry, moss, stripe and finish.

For a cheap job of painting, sandpaper the body well and give a coat of rough stuff. When dry, putty a little and, when putty in turn is dry, smooth down a bit with lump pumice stone or, if you wish, sandpaper it. Apply a coat of lamp black and, when this is dry, apply a coat of color varnish. When last coat dries, rub out varnish, and finish. For the gear, sandpaper all over and give a coat of dark lead with camels hair brush. When dry, moss and give a coat of solid covering color varnish. Do not putty.

For a medium job, sandpaper body all over and give it a coat of rough stuff in which there is a great deal of keg white lead. Don't use oil; there isn't time. When this coat is dry, putty or glaze and, when putty in turn is dry, apply four coats of regular rough stuff. When the last coat of rough stuff has become dry, sandpaper lightly and apply a coat of drop black. The next coat is one of regular black varnish. After this dries, rub and finish. For the gear, sandpaper well, give a coat of



lead (tinting lead the color gear is to be) and, when this coat is dry, putty. When the putty has become dry, sandpaper lightly, give gear a coat of the desired color and, when dry, apply a coat of regular color varnish. Moss, stripe and finish.

If you get a good job of painting, or a "first-class job" as it might be called, for which you are to receive a good price, begin by burning off the body. Sandpaper the body well, apply a coat of lead in which there is a little oil and, when dry, putty. When putty has become dry, sandpaper. Apply five coats of rough stuff and, when dry, rub out. Sandpaper lightly and administer a coat of lamp black. When this has become dry, moss off and give a coat of drop black. Next apply a coat of black varnish. When dry, rub and give a coat of black varnish, half black and half clear varnish. When dry, rub and finish. For the gear, scrape off the old paint, sandpaper well and give a coat of lead. When dry, putty. Sandpaper, when putty is dry, and then apply a coat of dead lead. When this coat has become dry, moss off and give a coat of color. Next apply a coat of color varnish and, when this dries, moss or rub stripe and finish. This method of painting will do for automobiles. Have four methods of painting, and you will surely gain business through one of them.

Some painters advise mixing varnish, that is, mixing a slow drying varnish with a quick drying one, so that the work may dry quickly in the winter time. I claim that this will not work well if you mix it yourself as it will dry in spots and will not be uniform. I have done this, for instance, mixed black varnish and gear or body varnish and used it on top irons and old buggy bows, but it will not dry uniformly. Would any body finisher put rubbing varnish in his body varnish to produce a nice job? If he did the rubbing varnish would set and the body varnish would keep flowing out and make a bad job of it. I have used gear varnish on a cheap job of painting on which I did not mind a few brush marks, but on the whole, all painters agree that when they mix varnishes they are taking chances. There are many quick drying varnishes now on the market which will do satisfactory work in the winter or on damp days.

Some claim that varnish becomes better as it grows older. If so, why are not the varnishes marked with the date of their manufacture? Some of the varnishes one gets these days must be very young from the way they work. Another thing the makers of varnishes put in all the turpentine the varnish will stand. If you put in more, like some painters do, you spoil it; the luster is killed. Then people say that the varnish is no good—who made it "no good"? The best varnish made will not stand doctoring, and if you doctor it you have no right to blame the result on to the varnish maker. Any good carriage painter can tell by looking at a varnished job if the varnish has been doctored. Some painters if their varnish becomes a bit thick, put turpentine into it. The best thing to do is to heat it, also heat the bodies and gears to the same temperature. Small shops should buy body varnishes in small cans. If you do this you will have no thick varnish. Use it on small panels. I sometimes use thick body or gear varnish upon shafts and on the gear parts. It is not well to use it on the wheels.

### VARNISH EXPERIENCE

In Australian Coachbuilder, C. S. J. repeats varnish cautions that will refresh the memory. Here they are:

Don't waste time touching up a revarnished job that is in a bad state. Clean off and apply one coat of quick color, reline and varnish.

When putting a new brush into use, first pour a little raw oil into the stock and allow to stand a day.

In the case of a job finished a dark lake with a carmine stripe, don't glaze the lines, but put sufficient carmine in the first coat of varnish and glaze and varnish the job in one operation.

Don't use fine Japan colors for touching up repairs; always

keep a stock of dry colors on hand. These are soon knocked into shape.

To preserve monograms, etc, when repainting, coat the ornament with office glue and paint over the monogram, as if you intended not to save it. After the last coat is dry, soften the glue with warm water, and it may be easily removed. Another way is this. After each coat is set, wipe the paint off the ornament and clean up the whole after the last coat is hard.

Elasticity is life. Now, gold size has this quality taken away by the infusion of dryers, leaving it harsh and quick in its nature. An approximate test as to its quality is adhesiveness and body. Hold a little between the thumb and forefinger to test the tack. The more it has the better. All else being equal, choose the lighter colored.

Put a pint of glycerine in one gallon of water and it will not freeze. Water in gas meters is so kept.

To paint rough iron, saturate with petroleum, then sand down with emery cloth. Mix paint with equal parts raw oil and gold size, thin this down to a working consistency with turpentine.

The panels of business wagons are sometimes made of zinc or galvanized iron. Both are of a greasy nature, and paint will chip and peel off quickly if no means are taken to check it. To make a good job on this surface, take muriatic acid of full strength, into which drop some pieces of zinc, then add an equal quantity of water. With this mixture coat the surface. This roughens the surface, and forms a grip for the paint coats; previous to applying the paint wash off the surface with vinegar.

The action of salt on varnish is injurious to it, and is almost as bad as the action of ammonia.

In shading gold for a blood red use carmine, verdigris for a green cast, ultramarine for blue, and asphaltum for the true shade of a sovereign. If possible, always shade gold after a coat of varnish is applied, as you can do the work quicker and cleaner when this system is followed.

No amount of skill can produce delicate tints of light colors when mixed in gold size, as in flake white, which at once assumes a dirty cream. Light blues and greens are also affected in the same way. Too much size also injures even lake or ultramarine, although not so rapidly as in the case of lighter colors.

Most gold size is unsuitable for gilding purposes. An oil that has been used for keeping the carriage varnish brushes in is an excellent medium if about two years old. This is then thoroughly ripe, and should be strained through fine muslin and kept corked up. Use with a slow drying size in proportions to fit in with time. Equal parts should be fit for gilding in about six hours.

Tube colors: When using these in oil for lining, add patent dryers in preference to liquid dryers. This tends to give the color more body to the pigment.

You wish to sweep the varnish room without raising a dust—just sprinkle wet sawdust on the floor and sweep clean.

Chamois and sponge: Get slimy occasionally; put a handful of fresh lime in a gallon of water, and soak them for one hour or more, then rinse well in the liquid, and wash in clean water.

To get a good surface on canvas that is to be fitted on panels, stretch the canvas thoroughly on a wall, give two coats of oil color, then a coat or two of prepared filling, put on with a broad-bladed putty knife. Face down to a smooth finish, and when dry, fix in position on the panels. This will not shrink again.

To paint a job pure white, use the color ground fine mixed in oil one part, hard varnish one part, turpentine three parts. Use the color thin, and apply with soft brushes on the panel work. After the surfacing, give each coat a light rub with pumice and rag, and, when solid, apply three coats of white enamel. The last coat makes the final one. Varnish will only destroy the purity of the white.

In revarnishing old work it is a safe plan on panel work to flat down and wash off thoroughly, and immediately previous

to varnishing take a small clean sponge and go over the panels with a little turps. This very often checks any liability there may be of the varnish crawling or pitting. It will only occupy a few minutes, and if it does no good it certainly will do no harm.

### GLUE TESTING

What is wanted is information about the working qualities in glue, the ready-made product; this in contradistinction to information about the making of the glue.

There is little doubt about what these qualities are, just these two: Water-taking capacity and strength—as expressed in these two questions, "How much surface will the glue spread?" and "What is the strength of the work?"

The water-taking capacity is gauged by the viscosity tests, which gives information about the body thickness of the glue. In pure glues the rule holds good that the thicker the body of the glue solution the better the glue.

The strength is gauged by the jelly test. The glues are all made up in the same proportion, say one part of glue to eight parts, or six parts or even four parts of water; these test portions (around four ounces) are melted in the glasses (usually tumblers), then put in cold water, and, when the solutions are jellied out, the glues are compared and ranged according to the stiffness of these jellies, as it is felt by tapping the surfaces with one or two fingers, care being taken not to tear or break these surfaces. The rule is that the stiffer the jelly the better the glue. This test is perhaps more practiced and more relied upon than the viscosity test, though both of these tests are now used. But in the final judgment the jelly test counts for more, at least in the United States. The supposition is here more generally accepted that the jelly strength is a better indicator of real glue strength than is the viscosity test, perhaps for the reason that all the glue houses know from their own experiments that it is so easy to raise the viscosity of a glue, and do it without really raising its grade.

The information derived from viscosity tests as well as jelly tests should be of such a nature that it would serve the purpose of figuring out the preparation of any glue in any size batch and for any kind of practical work or purpose.

The testing system should be so arranged that the testing of a single glue told the whole story; it should not be necessary to make comparative tests.

The results from jelly test and viscosity test should be so arranged that from the relation of these two tests to each other information could be derived with regard to the nature of the glue and the processes of its making; also about how the glue would act when applied.

These jelly and viscosity test figures would in connection with the results from ash analysis of the tested glues give information of special interest.

In addition there should be tests for the determination of the tensile strength of the glue itself and also of the tensile joint strength obtainable with the glue under specified test conditions.

A couple of simple tests locates any glue with regard to viscosity and jelly strength, and a repetition of these tests defines this location with more accuracy, while, at the same time, this repetition serves as a check and minimizes the chance for errors in figurings or observations.

The tensile strength test of the glue itself and the joint test made with the glue under specified test conditions throw full light on the jelly and viscosity tests.

### GREEN PAINT

Chrome greens are so called from the fact that they contain chromate of lead. These greens are of a widely varying nature, ranging from the technically pure quality to as low as only 5 per cent. or 6 per cent. green, the balance being barytes, china

clay, gypsum, whiting or some similar inert base. There is considerable popular misunderstanding as to the nature of this color, for while it is manufactured or "struck" in a similar manner to other chemical colors, it is in effect a physical combination of Prussian blue and chromate of lead, and is essentially an intimate mechanical mixture rather than a chemical combination.

There has been little or no attempt made in the past to standardize or grade these greens according to their per cent. of purity (that is the percentage of pure green and to inert base).

Absolute permanency of color is a chemical impossibility in green, even though it is chemically pure, and the green that is perfectly balanced with the proper extender is more permanent than the chemically pure, which has no value other than strength and which can be so strong as to destroy, fade and bleach by chemical action, under the sun's rays, the tint originally produced, consequently a scientifically correct green is not only practical, but economical, and it need not contain over 25 per cent. chemically pure green.

### WHY PAINT?

Paint is a form of insurance that stops the slow types of burning known as decay and rust.

Paint in the character of a beautifier has overshadowed its more important functions.

Color being an incident not a fundamental quality of paint, it is easy to overlook the economic value of the pigment.

The protective value of paint is not disturbed by its beauty.

Deterioration manifests in several ways. The first sign is a loss of lustre. A paint that is firmly adhering is still lustrous.

Linseed oil is the chief ingredient of paint. It absorbs oxygen from the air and becomes a tough elastic substance called linoxyn.

The painter does not know what the expert knows about the fundamentals governing the economy and service of paints. The painter is a craftsman, not a chemist.

Rust and corrosion, like decay of timber, can be stopped or prevented by use of sufficient paint.

### JAPANNED DISPLACING BRIGHT WORK

"There appears to be an unusual demand for japanned automobile parts. Brass lacquered, offers a surface entirely negative, and, if anything, repellent to practically all kinds of ordinary paint brushed on in the ordinary way.

This being the case, the question arises, what is the best method to use in finishing these brass surfaces in paint colors, principally black?

In the first place, an oven must be provided in which to bake the enamel on these small parts, such as lamps, windshield rails, grab handles and other attachments. Probably an oven anywhere from 4 feet to 6 feet square, or in any shape, but containing about the number of square feet which these 4 or 6-foot ones do, will answer the purpose for many of our readers who simply wish to take up the enameling work on a small scale and handle only small parts.

Such an oven, with the latest attachments, to be heated with either gas or gasoline—gas being preferred—will cost probably close to, if not quite, \$50. These ovens, of course, may be made to cost from \$35 to \$500, local conditions and circumstances figuring as factors in the matter. Gas as an oven heating medium is to be preferred for numerous, and substantial, rea-

sons, chief among which is the fact that it is not only a safe medium, but a very quick heating one, and it is largely used in operating many large ovens."

The above is extracted from *The Automobile*. We judge the experience of the able editor with baking, or japanning, ovens is purely academic, as he is giving fluent advice but making no mention of accident policies for "many of our readers" who may try japanning under the guidance of the able journal.

### BOILED OIL

There is great secrecy observed about boiled linseed oil by the makers. Its drying properties are increased when heated to 300 to 500 F. If salts of lead or manganese are incorporated into the oil, a similar result is produced, and the simplest and in former times the universal method of increasing the drying properties of linseed oil was to heat the oil to near the temperature at which it undergoes destructive distillation (550 degrees Fahr. or thereabouts) and stir in at the same time oxide of lead or oxide of manganese, or both.

This method, however, is not generally followed nowadays, particularly in the production of "commercial-boiled" oil. The best "kettle-boiled" oil obtainable today is produced by heating the oil but little over the boiling point of water, and holding it there only long enough to expel most of the moisture it contains, adding to it a small amount of drier.

It is claimed by some that the so-called "bung-hole-boiled" oil is just as good in actual practice as the modern "kettle-boiled" oil. It would seem that quality of the drier employed would have much to do with the truth of this claim. It is apparent, then, that the user of boiled oil, of whatever process of manufacture, is deluded if he thinks that he avoids the use of drier.

### ADULTERATED TURPENTINE

The Department of Agriculture has issued a bulletin announcing that turpentine adulterated with more than 10 to 20 per cent. of coal tar oils, or gasoline or kerosene which have not been deodorized, may usually be detected by the characteristic odor of the mixture. The odor of rosin spirits, while distinctive, is difficult to detect in mixtures with turpentine. The presence of petroleum oils is also indicated by bubbles or "beads" persisting for a few moments on the surface of the turpentine shaken in a partly filled bottle. The presence of more than about 10 per cent. of kerosene or similar mineral oils is detected by the spot which a few drops of the sample placed on white paper leaves on drying. Gasoline and other light mineral oils do not leave this spot. The detection of mineral oils in turpentine is relatively quite simple, and is accomplished by mixing the turpentine with a certain proportion of sulphuric acid of a given strength, in which the turpentine is destroyed and mixes with the acid while most of the mineral oil remains unaffected and separates in a layer on top of the acid. The consumption of turpentine in the United States during 1908 was approximately 15,000,000 gallons. If 18 per cent. of this was adulterated, then approximately 3,000,000 gallons of adulterated turpentine, containing an average of at least six gallons per hundred of mineral oil, costing about one-fifth as much as the turpentine, was sold at turpentine prices.

### PAINT AND VARNISH REMOVERS

Some of the more successful paint and varnish removers are covered by patents which prohibit the use of their principal ingredients, alcohol, benzol and wax, or their equivalent. A preparation made according to one of the following formulas is free to use:

No. 1—Flour (or wood pulp), 385 parts; hydrochloric acid, 450 parts; chlorinated lime, 160 parts; oil of turpentine, 5 parts. This mixture is applied to the surface and left for some time.

It is then brushed off, and brings the paint away with it. It keeps moist quite long enough to be easily removed after it has acted.

No. 2—Sodium hydroxide, 5 parts; solution of sodium silicate, 3 parts; flour paste, 6 parts; water, 4 parts.

No. 3—Soap, 10 parts; potassium hydroxide, 7 parts; potassium silicate, 2 parts.

No. 4—Sodium hydroxide, 3 pounds; whiting, 4 pounds; flour, 1 pound; water,  $\frac{1}{2}$  gallon.

Dissolve the sodium hydroxide in part of the water and mix the whiting with more water to form a cream. Add the sodium hydroxide solution to the whiting cream, then mix in the flour made into a paste with the rest of the water.

For use, 1 pint of this solution is mixed with about two gallons of water.

### THE NAME OF IT

The word carriage forms an instance of divergence from the original meaning.

It once meant "what men carry."

"And David left his carriage in the hands of the keeper of the carriage," 1 Samuel 17-22, and this is probably the first mention of the word.

The Romans had four species of carriages, used for domestic, agricultural and warlike purposes: the Benna, a carriage elevated on two wheels, calculated for carrying two persons; the second, the Petoritum, with four wheels; third, the Carrus, resembling our baggage wagons, and used for that purpose, as well as the conveyance of produce; and fourth, the Covinus, which was the war chariot, set with scythes and hooks, and intended to cut everything down opposed to it, and well calculated for a country abounding with thickets.

As early as the year 1485, King Henry the Seventh entered the city of London after his victory at Bosworth, in a close chariot drawn by several horses; but the first carriage that calls for notice was that employed by the Jesuit missionary Matthew Ricci, which had but one wheel, so built that you might sit in the middle as it were on horseback, and on each side another, which was pushed forward with bars of wood, and on this he traveled between his two churches in China.

The first carriage ever seen in England was made in the year 1555, by Walter Rippon, for the Earl of Rutland; and later the same builder made one for Queen Mary.

In the year 1564, Wilhelm Boonen, a Dutchman, was made coachman to Queen Elizabeth; then the fashion spread among the aristocracy and made coachbuilding a prominent and profitable trade; for we find this item in the Household Book of the Kytson family, dated 1573, "£34 14s. 0d. for a coche and furniture: 2s. 6d. for painting the family Arms upon it, and £11 19s. 9d. for horses to draw it."

The first coach seen in Scotland was probably that of the Queen of our James the First; for the diary of Robert Birch records that after this King's departure to England "on the 30th May, 1603, her Majesty came to Janet Geill's Kirk weill convoyed with coches, herself and the Prince in her awin coche, and the English gentlewomen in the rest of the coches."

Wilson, who wrote the life of this King, in speaking of the Earl of Northumberland says, "the stout old Earl when he came out of prison, hearing that the favorite Buckingham was drawn about with a coach and six horses, thought he might very well have eight; with which he rode through the city of London to Bath, to the vulgar talk and admiration, and recovering his health there, he lived long after at Petworth, in Sussex."

### PURCHASES THE FISHER WAGON FACTORY

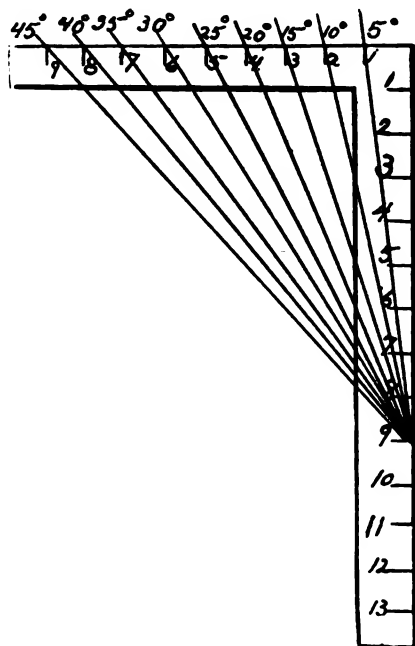
It is reported that T. F. Stroud, whose plant in Omaha, Neb., was recently destroyed by fire, has purchased the Fisher Wagon Factory in Chicago.

# Smith Shop.

## SMITH SHOP KINKS

### To Use a Square as a Protractor

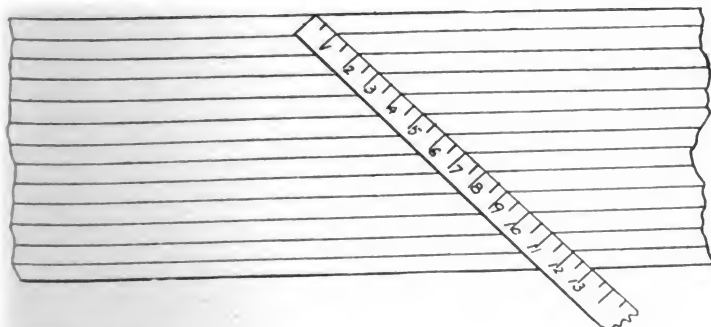
It is only on rare occasions that we find a protractor in the equipment of blacksmith shops and the smith has often difficulty in arriving at anything like a definite conclusion regarding angles. But this difficulty can be overcome to a certain extent by the use of an ordinary graduated try square and a bevel square, tools which are or at least ought to be in every shop.



The method of finding a close approximate of any desired angle is as follows: Use the ninth graduation on one arm of the square as a base to work from. A straight line from there to the first graduation on the other arm is approximately five degrees, to the second graduation ten degrees, and so on, each graduation being approximately five degrees. Probably this matter will be better understood by referring to the engraving.

### To Split Sheets Uniformly

Let us suppose there is a sheet nine inches in width to be split into thirteen strips of equal width. Ordinarily, it would



take some time to figure out exactly how wide each strip ought to be, but if a rule is laid diagonally across the piece so that the extreme end of the rule is flush with one edge and the thirteenth graduation flush with the other, as shown in the diagram, a mark can be made at each graduation. The same thing is done at another part of the sheet and parallel lines

drawn between the marks at both places. The sheet can then be split into the required number of strips without necessarily knowing their width or doing any figuring whatever.

### Finding the Circumference of Diameters

To find the circumference of a diameter as is necessary in making circular forgings such as rings, bands, etc., either of the following methods can be used with perfect safety: Multiply the diameter by 3.1416, or by  $3\frac{1}{7}$ , or by 3.15, or it may be multiplied by 22 and divided by 7, all of the above methods give practically the same results. Another plan which is thoroughly reliable is to lay out the circle full size as shown in

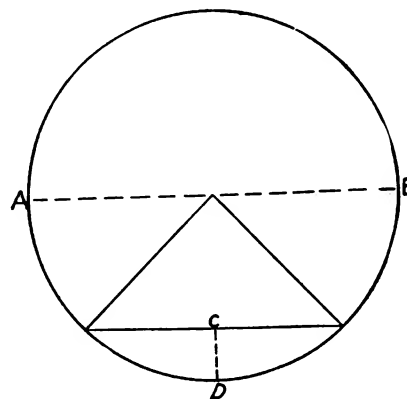


diagram. When this method is followed the angle of a square is placed at the center point of the circle and lines drawn to the outer edge of the circle. A straight line is then drawn between the points where the lines from the center touch the circle. The distance between C and D is equal to  $\frac{1}{7}$  of the distance between A and B and that distance is added to three times the diameter. In all cases it is necessary to add the thickness of the material to be used to the diameter before any figuring is done.—The American Blacksmith.

## TESTS OF TIRE EFFICIENCY

In order to accurately define any strain or burden, tests of uniform nature form an indispensable condition. These, to be of utility, should as far as possible reproduce the influences to which the objects tested are subject in actual use. The value of such tests is enhanced when the comparative effects of an identical cause is shown with reference to various forms of material.

The importance of this principle as to the resistance of tires for trucks, has been demonstrated by a tire company. Solid tires, they claim, do not seem to have given the results expected from them with commercial vehicles, there having been a double sacrifice of speed and lightness. An increase of 5 per cent. in weight, instead of reducing the wear, increases it, it is stated, by about 14 per cent. It is added, that while solid tires have certain advantages in the reduction of noise, they are hardly more satisfactory than ordinary iron tires in reducing vibration. If nothing can be gained in speed, horse traction, it is urged, becomes far more economical.

Out of fifty experiments made, typical results are quoted in respect to eight.

A wheel loaded with a weight of half a ton, fitted first with a solid rubber tire 2.46 inches thick and then with a pneumatic tire, was set revolving at a speed of 16 miles an hour on a flywheel. The displacements of the hub of the wheel were registered by a pen attachment, which traced the exact height

of each rise and fall on a cylinder revolving at uniform speed. In this way the flywheel exactly represented the uneven surface of a road, while the wheel played the part of a car wheel. Over a long half oval obstacle, 1.17 inches high, the solid tire raises the wheel 2.30 inches. Over a long half oval obstacle, 1.17 inches high, the pneumatic tire raises the wheel 0.44 inch.

The diagrams indicate that the pneumatic tire absorbs the obstacle, the height to which the hub is raised being less than the height of the obstacle itself, while the solid rubber tire does not prevent the wheel from rising higher than the obstacle.

### WEST TIRE SETTERS FOR ARGENTINA

E. A. Grenelle, secretary and treasurer of the West Tire Setter Co., of Rochester, N. Y., write us that business is excellent in their line of "Rochester" helve hammers so far this year. They have just received an order from Buenos Aires for one of their large tire setters for handling wheels 6 feet 6 inches in diameter down to 30 inches, tires 6 inches wide by 1½ inches thick and all lighter sizes.

### BODARK FOR WAGON WHEEL FELLOES

This "iron wood" or osage orange of the southwest is admitted good for the construction of wagon wheel felloes on vehicles used in semi-arid belts.

The only place in the world where this timber grows to sufficient dimension to be worked up into felloes is in southeastern Oklahoma and northern Texas, the greater portion of the liveoak belt being in these states. The Saturday Evening Post suggests further development of this industry.

Recently a representative of the National Wagon Manufacturers' Association called upon Mr. Sackett, manager of the national office of wood utilization and asked:

"How much osage orange or bodark timber is there in this country?"

Evidently he expected an immediate answer in definite figures, but received this reply:

"I don't know; why?"

"Because we've got to know," responded the wagon manufacturers' representative. "In the first place, there is no timber grown that will take the place in the manufacture of wagon felloes for those sections of the country where it rains for a few months and is hot and dry for the rest of the year. Next, it seems to be getting suddenly scarce and the price is climbing higher and higher; in fact it has every symptom of having been cornered by a trust. Right now it costs us three times what it did a few years ago. We've got to find out how much of it there is, whether it's been cornered and what is the future outlook for the supply. You see the farmers in the arid states simply refuse to accept any substitutes for osage orange or bodark wagon felloes. They're willing to pay a premium of \$15 for a bodark wagon. It's about the biggest question we've been up against in our association, and we've got to find out where we're at."

"I'll try and find out for you," answered Mr. Sackett, "but it's too big a question to be answered in a day or a month—it will take time and travel and investigation."

"If we find the supply is going to pinch out on us," remarked the man from the Wagon Manufacturers' Association, "we've got to start in on a campaign of education to drill out of the heads of those Texas and southwestern fellows the notion that nothing but bodark will do for wagon felloes."

"Or, perhaps," suggested Mr. Sackett, "get the men who grow that kind of wood to grow more of it—or, if that does not seem feasible, find another wood that is really just as good under actual test and not so expensive."

The investigation was started at once. First, it was definitely determined that the preference for osage orange felloes in the arid regions was not a mere prejudice; that, in the case of a

wagon having osage felloes on its front wheels and those of oak on its rear wheels, the osage felloes were in sound and serviceable condition while the oak felloes shed their tires and fell apart. The investigation also disclosed that the osage wood, of timber size and character, is mainly produced in a restricted region in northeastern Texas and southeastern Oklahoma; and that, considering its present consumption, the bulk of it is bound to be gone in ten years. Also it was found to be uncontrolled by a trust. The wagon makers found out where they are "at"; and that if they hope to have anything like a permanent supply of this wood they must encourage the planting of it. The fruits of the investigation, however, were finally presented in a fourteen-page bulletin covering every phase of osage orange wood utilization.

### HOUSTON TO HAVE LARGEST WAGON PLANT IN THE SOUTH

In the announcement of the reorganization of the Eller Wagon Works, incorporated with a capital of \$40,000, under the title of the Texas Wagon Works, with double that capitalization, the news is made public that this concern is preparing to branch out into an industry that will give Houston the largest wagon manufacturing plant in the entire South.

The officers of the new company are: W. T. Tanner, of Flint, Mich., president and manager; J. W. Trimble, vice-president; J. M. Powers, secretary; Travis Holland, treasurer.

In the reorganization, Mr. Tanner is the only acquisition to the former set of stockholders. He has had long experience in the wagon manufacturing business. The acquisition of Mr. Tanner is the result of a careful search for a man who could carry out the determination of the owners to develop the plant into a huge institution in keeping with the growth of Houston.

"We will not make any immediate enlargements to the plant," said Mr. Tanner, "but expect to make considerable enlargements as our plans develop. The equipment of the plant as it stands, I must say, is the best and most complete I have found anywhere."

"Our present efforts will be directed to enlarging the field of the business to cover the entire South. Up to the present the company has done almost entirely a local business. Agents will be placed in the field all over the South immediately. There is a sensible demand for a wagon factory for making vehicles for strictly commercial use in the South. I consider that the ideal point for such a plant to be in Houston. The proximity to Houston of the supply of the various kinds of wood used in the construction of our wagons is a valuable consideration in favor of Houston as a location."

"There is now no larger nor more important mercantile wagon factory in the South than this one, nor no better equipped one for its size anywhere. There are other larger factories for the manufacture of farm wagons in the Southeastern States, however. Our plans are to make this the biggest and most important wagon plant of any kind in the entire South."

While for the present the company will restrict its attention to delivery and similar wagons drawn by horses, Mr. Tanner admitted that it may be found advisable as the concern grows to turn out certain types of motor-propelled wagons for commercial use.

Mr. Tanner was connected for fifteen years with the Durant-Dort Carriage Company, at Flint, Mich., from which he moved to Houston. He stated that the plant will employ upward of 100 skilled workmen from the start.

### SHIP WAGONS TO CUBA

The Belknap Wagon Works, Grand Rapids, Mich., has recently shipped a large order of orchard wagons to Cuba. The demand for orchard wagons has been strong this year and it has been coming from nearly every direction, indicating the awakened interest in fruit culture all over the country.



# Good Roads.

## ROAD BUILDING BY CONVICTS

By Governor Mann, of Virginia

With fifty-two thousand miles of highways, the construction and maintenance of roads becomes most important.

That we have recognized the importance of the question is shown by the establishment of a State Highway Commission as a department of government.

We have now at work on the roads fifteen camps, two under the old law, in which about five hundred and ninety-three convicts are employed, at an expense of about 50 67/100 cents for each convict working ten hours a day, and 34 34/100 cents for each calendar day.

In addition to the five hundred and ninety-three convicts working on the public roads, in fifteen counties there are two hundred and forty from the jails, making the total number at work eight hundred and thirty-three. It has been demonstrated that the convicts, after a little experience, are good and efficient laborers, and I think can be made more so.

I am informed by State Highway Commissioner that on macadam roads the difference in favor of convict labor is fifteen hundred dollars per mile over free labor, thus reducing the cost of roads of that character from \$4,900 per mile to \$3,400. While on sand-clay or gravel roads the cost is about the same because on roads of the latter class the convicts have to be separated and more guards are required.

The salaries and board of guards constitute a large part of the expense of working the convicts, and realizing this and the benefit, moral and physical, to the convicts, two states, Colorado and Oregon, have adopted plans of working convicts on the public roads without guards. By the plan adopted in Colorado a convict in the penitentiary is allowed for good behavior one month for the first year, two for the second and so on up to the sixth year, in which he is allowed six months, and stands at that for the remainder of his term. When he is on public works, in addition to the above, he is allowed ten days in every month for good behavior and efficient work, and Governor Shaforth informed me that all the convicts on account of the extra allowances were anxious to work on the roads and that they did faithful and efficient work.

Before leaving the penitentiary, all who are willing to do so take an oath and promise on their honor not to escape or attempt to escape; they are not shackled in any way and the men who direct the work are not armed; indeed, the only man armed in camp is a trusty, who has a rifle which seems to be used to keep people on the outside from coming in, rather than for the prevention of those inside from going out. The governor informed me that the cost of working a convict under these conditions was about twenty-five cents a day, and that the percentage of escapes was less than under the old system.

In view of these facts, I favor experimenting with one or more camps and if found satisfactory, to adopt the Colorado plan and put under it all the convicts working on the public roads. In addition to the inducements offered by this plan, the punishment for escape or attempt to escape might be increased.

## INTERESTING AND IMPORTANT

An interesting exhibit at the American Road Congress to be held next fall will be presented by the United States Department of Agriculture. Secretary Wilson, of the Department,

has authorized Director Logan Waller Page, of the Office of Public Roads, to give a complete exhibit of the Government's work on the public roads of the country, showing how unimproved roads hurt the farmer and how improved roads aid not only the farmer but the consumer.

Four of the biggest associations which are working for the improvement of public roads are consolidating their forces in order to make the next American Road Congress the biggest affair of its kind in the history of this country; they are, The American Road Builders' Association, The American Association for Highway Improvement, the American Automobile Association, and the National Association of Road Material and Machinery Manufacturers. All of these associations have previously held separate conventions. It is expected that farmers' associations and other associations interested in the improvement of public highways will likewise take part in the congress.

## LONDON STREET PAVING

Street paving in London, 25 and more years ago, was largely stone setts, and people who had not to live in it were accustomed to refer exultingly to the "roar of London traffic," but the widespread adoption of asphalt and wood reduced the degree of nerve strain; granite paving gradually came to be regarded as a thing of the past.

No better testimony to the silent running of vehicles which are fitted with rubber tires, is available for mention, than the decision of the Works and General Purposes Committee of the Holborn Borough Council to repair the carriageway of High Holborn with granite setts. It is not suggested that wood is insufficient to bear such rubber-tired traffic, but it is asserted that other heavy traffic, and particularly traction-engine traffic, damages wood paving, and that the necessity exists in this important thoroughfare for a reversion to granite setts laid upon a heavy bed of concrete.

## WHY FRICTION GEAR IS BEST

This noiseless transmission is greatly handicapped as regards its more general adoption by theorists who say it cannot work and by weaknesses in design, according to a writer in *The Motor* (England). In the early days of railways it was maintained that a locomotive could never propel itself on metal rails, as its wheels would simply slip round and not "bite," consequently a considerable amount of money was spent in making such contrivances as Chapman's engine, which wound itself along a chain fastened to the track; Brunton's, which propelled itself by feet and legs; Blenkinsop's, with a rack rail and pinion; and others. It was due to the enterprise of Mr. Blackett, of Wylam, that, in October, 1812, Hedley was enabled to construct his famous test carriage, by means of which the theory mentioned above was exploded and the locomotive as we now know it proved feasible.

Now, a certain similarity exists between the foregoing, viz., the grip of a locomotive wheel on the rail and the grip between a pair of friction discs at right angles to one another. In both cases the contact between the friction surfaces is at a point, and pressure is provided at this point whereby the power is transmitted.

One of the reasons why the adverse theorists prevail is that, in comparing friction with tooth gearing, the mind much more readily grasps the actual transmission of power by the visible (and audible) blow between the engaging teeth, and



overlooks the friction between their faces, owing to the pitch circles of the respective gearwheels approaching and receding from one another during the period of engagement.

A properly designed friction gear would not suffer from this defect, but a fault quite as disadvantageous is introduced by designers at the present day, who attempt to get too much contact between the friction discs, which is a survival of the "wheel-won't-bite" theory. In explanation of this statement, it will be found that the driven discs on countershafts are now being provided with soft, adhesive faces, such as leather, fibre, or some secret preparation of which great things are expected, which, when in contact with the driving disc, flatten themselves slightly under the pressure, giving an extended area of contact, having an appreciable width.

Now, it is a matter of common knowledge that the speed of a point on a revolving disc depends upon the radius at which it revolves, so, assuming a breadth of half an inch for the driven disc contact, the corresponding points half an inch apart on the revolving driving disc surface will be traveling at different speeds, and as the center of pressure is midway between these two, the speed at which the driven disc revolves is the mean of these two speeds. That is to say, that half the periphery of the driven disc is traveling faster, and the remainder slower, than the mean speed transmitted by the driving disc. So that the two halves of the friction disc periphery are mutually acting as a "brake" upon each other and absorbing power.

Actually, the power can only be transmitted by a point, which statement may be too much for some theorists, but it must be remembered that the point of contact under observation is one of an infinite number, which, by the revolutions of the gear, are developed into a continuous line of force, which may be likened to an electric current, this force being continuously applied, and not by means of a succession of blows, with frictional accompaniments, as in toothed gearing. There is also another property in connection with point contact which should be emphasized, and that is the prevention of slipping when oil or water is present on the friction surfaces, such conditions tending to considerably reduce efficiency in the case of the wide contact gears referred to. It is quite evident that oil or water cannot get between the points of contact when the pressure is applied, and, in fact, there is no reason why the gear should not be run in an oil bath for cooling purposes.

Another defect in modern design for friction gearing, causing power absorption, is that the pressure employed in bringing the faces together for the higher gear ratios is considerably in excess of what is really required. The amount of pressure requisite depends upon three factors: firstly, the power to be transmitted; secondly, the diameter of the friction discs; thirdly, the coefficient of friction, which, being a constant, may be disregarded in the following deductions. From the first two, i. e., power and leverage, we obtain the torque, and as the power is constant and the leverage variable, that is to say, the driven friction disc can be adjusted to varying radii of the driving disc for gear changing purposes, therefore the torque is variable, and that, inversely with the leverage; in other words, the smaller the radius the greater the torque.

Now, anybody acquainted with the rudiments of clutch design knows that the greater the torque the greater is the pressure required between the friction surfaces for the transmission of the power. So that, with the driven friction disc in its nearest position to the center of the driving disc, the maximum pressure is required.

This is usually supplied by the expansion of a spring; there is also an alternative method, in which the tension of the driving chain does this work, and in both these cases this maximum pressure is maintained throughout the whole range of gear variation, so that unnecessary work is thrown upon the thrust bearings, that have to take the reaction to this pressure in all but the lowest gear ratio. That the variation in this pressure is considerable is shown by taking the case of a pair of friction discs 2 feet in diameter, having a low gear ratio of 12 to 1.

In low gear the relation of the pressure to that required for high gear is as 12 is to 6.5, or nearly double.

It is a perfectly easy matter to construct a gear in which this variation of pressure can be applied; the difficulties are not insuperable, and if only theoretical prejudice can be overcome there is no reason why good low-powered cars should not be constructed in which the friction drive will be applied direct to the live axle, thus eliminating much costly machinery, saving weight and tires, together with power and upkeep generally. The vehicle naturally being less expensive to make, would be cheaper to buy and would command a good sale, and its performance, both as regards efficiency and silence, even after some months of working, would ensure its popularity.

## THE BALL BEARING

Despite the perfection to which the manufacture of ball bearings has been brought and the relatively infrequent failure of bearings in service, the fact remains that there are occasional cases of fractured balls or races or of excessive or apparently unaccountably irregular wear. Though it is apparent that some of them at least may be laid at the door of the bearing manufacturer, though it may be due to no fault of his but rather to some indistinguishable flaw in construction, it is equally apparent, and in view of the specialization in manufacture which is necessary it is quite logical that the greatest trouble may be traced directly to the car manufacturer in faulty mounting or in the use of bearings of other than the proper size for the load. The life of the bearing manufacturer has not been an easy one: car manufacturers have been slow to realize that none is better able to advise the size of bearings to be used for a specific purpose and the method of mounting than the bearing manufacturer, and as a result, though failures really are scarce, they are not quite as scarce, perhaps, as they might be if automobile manufacturers had come to the realization sooner.

## WASTE OF POOR ROADS

Two hundred and fifty million dollars are wasted annually on poor roads in the United States. If you add to that enormous sum the additional money that it costs, through the losses in business caused by these bad roads, the sum leaps to \$1,000,000,000 a year. In other words, every man, woman and child in the United States bears a burden of \$12.50 a year caused by poor roads.

## TO FORM LOCAL SHOW CIRCUIT

On account of demands made on manufacturers by the overgrowth of local show promoters, and in line with the recommendation made by President Metzger in his annual report in February last, the National Association of Automobile Manufacturers has undertaken to relieve the situation by organizing a circuit of local shows. To that end, the N. A. A. M. show committee shortly will extend invitations to the show promoters of a number of cities to meet for a full discussion of plans for the proposed circuit.

Under the rules of the association, no manufacturer, as such, may take part in a local show, but in the event that his dealer contracts for space he may supply a show chassis, a salesman or salesmen, literature, and contribute to the advertising expense, but with more than 70 show promoters voicing demands the burden became too great to be longer carried.

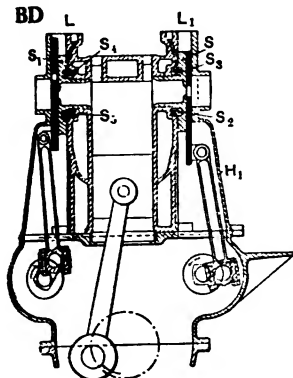
In seeking relief by the formation of a circuit, it is not the intention to prevent the holding of any show, but as the circuit will include the principal cities it will be so arranged that dates will not conflict, and as it will have the approval of the N. A. A. M., it is more than likely that the members of the N. A. A. M. will find it advantageous to support only those shows which are in the circuit.

## Piston and Rotary Valve Engines

The Automobile has gathered from all quarters all that is new in motors of the above type and briefly describes them. This is useful information for all in the vehicle business who wish to be posted. We describe and illustrate some of them from the work as prepared by the periodical mentioned.

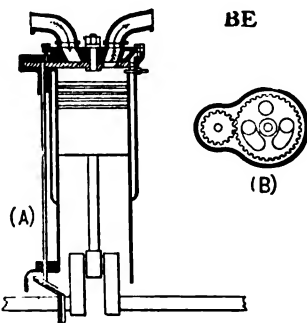
### The Lewis Slide-Valve Motor

The section of the motor shown at (BD) is the idea of Edmond W. Lewis, Coventry, England, and as far as the actual valve gear is concerned it is somewhat similar to the action of the slide valve used in steam engine practice. The slide valves consist of flat cast-iron plates about one-half inch in thickness, provided with slots B and D. The valve is caused to reciprocate through the action of the connecting rod running at one-fourth speed of the crankshaft and driven therefrom by a suitable gearing. Each valve is provided with a balanced stationary valve seating. The valve seating or packing blocks S and S1 are kept in continuous working contact by the pressure of eight small coil springs S2, S3, S4 and S5, which are retained in position by recesses in the back face of the block. The covers H1 are detachable and the sectional drawing shows the position of one of the sliding blocks during the exhaust stroke. The valves are lubricated under pressure at the points L and L1.



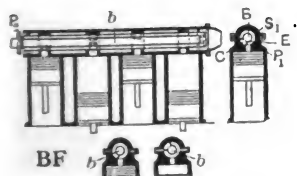
### Marshall Rotary Disc Valve Motor

Fig. BE shows two sections through the Dale Marshall motor. The section through the head of the cylinder shown at (B) shows the disc valve with a port hole, which is caused to rotate and cover the intake and exhaust ports. The valve plate in (A) is connected by means of a pivot at the periphery of the valve plate to teeth, which are in mesh with a tooth wheel situated in a recess and driven by the vertical shaft by oblique and eccentrically formed gearwheels. The cylinder head is in the form of a cover secured by screws which facilitate the removal of the valve for inspection.



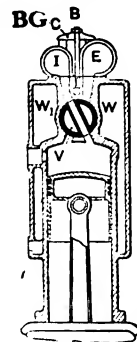
### Von Lauerer Rotary Sleeve in Cylinder Head

The method employed by von Lauerer is applicable to any number of cylinders, and it will be seen from the accompanying illustration BF that the valve mechanism is placed directly in the head of the cylinders and communicating with them by means of a single port P1. Running on ball bearings is a sleeve S1 driven from the crankshaft by means of a silent chain to the pinion, which causes the sleeve to rotate. Within the sleeve there is a pipe B with suitable slots cut in it, so that as the chamber C2 passes over the passageway P1 the gases are admitted to the cylinder through the suction of the piston. Exhaust is carried away through the sleeve S1, the exit being through slots E. The intake manifold B, being placed as it is inside sleeve S1, will cause mixture to be previously expanded.



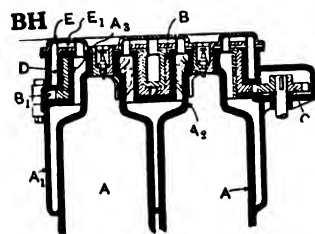
### Empress Motor Has Water-Cooled Rotary Valve

The Empress engine shown in section in Fig. BG is English. The valve V is driven by worm gearing from the crankshaft and runs at one-quarter speed of the latter. The motor is of the four-cycle type and has four cylinders cast en bloc. The cylinder head casting, water-jacketed at W and W1, is so formed that a water-jacketed and ported sleeve running the whole length of the block over the combustion chambers acts as a rotary valve. Suitable glands are provided for the water-jacketings. The intake and exhaust manifolds are respectively bolted to the cylinder casting by means of the clamp C and the nut B. The illustration shows the motor at the moment of induction.



### De Dion-Bouton Rotary Sleeve Motor

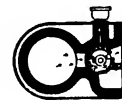
The engine is provided with two cylinders A (as shown in Fig. BH), surrounded by a water jacket A1 common to both.



The combustion end A2 of each cylinder is reduced and the corresponding portion A3 of the water jacket is similarly reduced. Around each reduced portion A3 a rotary sleeve valve B is mounted. Each sleeve is provided with teeth B1, which mesh together and receive motion from a gear wheel C that engages the teeth of one of the sleeves. Surrounding the sleeves is an outer casing D that fits the sleeves and also fits against the wall of the water jacket above and below the sleeves. The walls of the outer casing D are made hollow and are open at the end, as is also the water jacket A1, and these open ends are covered in by a plate E. This plate is provided with interior passages E1 that communicate with the open ends of the water jacket A1 and the hollow casing D, so that water can flow from the interior of one member to the other.

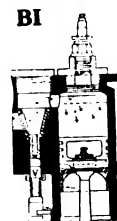
### Griffith Cone Shaped Rotary Valve

As shown in Fig. BI, the valve stem is rotated by bevel gearing, whilst the head is drawn on the seating by means of a spring. The port is formed by a slot, which is cut in the valve.



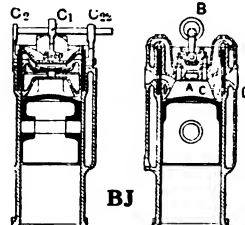
### German Invention Following Knight Valve

The operations of the sleeves C and D in Fig. BJ are controlled by the eccentric B, which is placed over the heads of the cylinders, the sleeve C being operated by the connecting arm C1 and the sleeve D by the connecting arms C2 and C22. The invention was registered by the Deutsche Automobil-Konstruktions-Gesellschaft.



### The Small Rotary Valve

The four cylinders shown in Fig. BK are arranged around the rotary valve. Two of these cylinders are in the longitudinal central plane of the engine, whilst the other two cylinders are inclined from opposite sides of the central plane towards the shaft axis. The crankpins of the end throws are in line with one another and with the pin B of the remaining throw, which is set at an angle of 180 deg. relatively to the pins A and C.

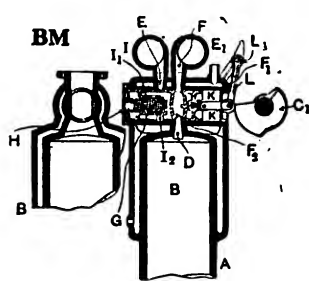


The rotary plug type valve has a central inlet passage leading axially into one end and an outlet passage leading from the opposite end. The inner ends of both these passages merge by easy curves into the required shape of their respective ports at the circumference of the plug upon which they bear, forming side by side the openings which are at the same level.

In view of the fact that all the cylinders are controlled by one valve, and since the valve itself cannot be modified to suit the angle between the axis of the cylinders, and because the pistons operating in these cylinders on the same pin do not come simultaneously to the extreme of their strokes, it becomes necessary to compensate for the time lag between the pistons in the cylinders; hence ports are set so as to have a certain amount of advance and lag.

#### Zeitlen Motor With Overhead Piston Valves

This invention relates to the reciprocating piston valve of the kind which is spring-urged in one direction and shifted positively in the other by means of a cam or a layshaft. The hollow piston valve A, shown in Fig. BM, controlling the

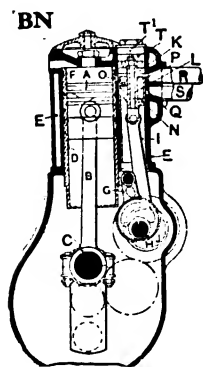


admission and exhaust of the working fluid to and from the cylinder B, is arranged to slide in a transverse valve casing, which is secured to or integral with the cylinder head being water-jacketed. There are three ports in the valve cylinder casing, the one at D leading into the working cylinder and E and F in the opposite wall of the valve cylinder, E communicating with the intake manifold I, and F communicating with the exhaust manifold E1. The piston valve has two sets of ports in opposite walls, the induction ports I1 and I2 being adapted to register simultaneously with the ports E and D respectively, and the exhaust ports F1 and F2 with the ports F and D respectively. The compartment of the piston formed by the walls acts as a mixing chamber.

The spring G urges the piston valve towards the induction position, and is enclosed within and compressed between the pocketed end wall and the cover H, which has an air hole. The sectional view of A (BM) shows the valve in the position of exhaust by means of a cam C1, the contour of which is such as to allow the spring to force the valve in the opposite direction during the suction stroke and to hold it so that the ports in the cylinder are covered during the compression and firing strokes. The cam actuates the valve through the lever L fulcrumed at L1 and fitted with a roller cooperating with the cam, the piston valve being connected with the lever L by the link K, an adjustable stop being provided to regulate the closing.

#### Serex Motor Has Two Sleeves to Operate Ports

This motor, Fig. BN, has two sliding members, one co-axial with and outside the piston and having mainly for its object to ensure the gas tightness of the cylinder, and the other situated outside the cylinder serving as a distributing valve to place the cylinder in communication with the inlet or exhaust. The engine comprises

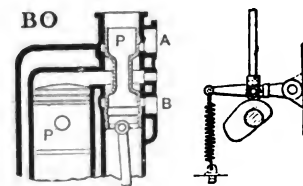


a piston A acting through a connecting rod B upon a crankpin C. The piston moves in a cylindrical sleeve D reciprocating in the cylinder E. The sleeve D has no port and is provided at its upper end with a packing segment F. The sleeve D receives a reciprocating movement from an eccentric G mounted upon a shaft H driven by the crankshaft and turning at a speed half that of the latter and in the same direction. At the side of the cylinder E is arranged a smaller cylinder E1 in which

moves a cylindrical slide valve I driven by a second eccentric J mounted upon the shaft H. This slide valve is provided with an annular recess K and an annular chamber L, in whose walls are formed two ports M and N. The cylinder E is provided with a port O and the cylinder E1 with two ports P and Q into which the admission pipe R and the exhaust pipe S lead. Above the valve I is a chamber T closed by a plug T1. The air enclosed in the chamber forms an air buffer and holds the slide against the eccentric.

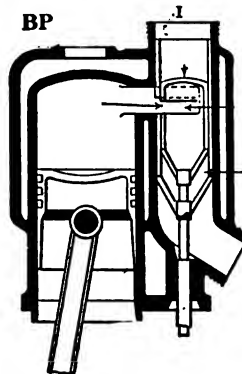
#### Wolseley Sliding Piston Valve Motor

The view of Wolseley motor is shown in Fig. BO. The piston P1 is placed inside a separate cylinder controlling the ports A and B and on the right hand side of the illustration (BO) is shown the cam mechanism which causes the valve to reciprocate. It will be noticed that the shape of the cam is such that the valve stands substantially stationary in midway position when it is rapidly moved to its extreme position for the exhaust stroke, and next passes quickly across to the extreme position for the inlet stroke, after which it returns to the mid position for the compression and working strokes. The valve chamber extends above and below the inlet port of the cylinder and is provided in the upper portion with the inlet port A and the lower with the exhaust port B.



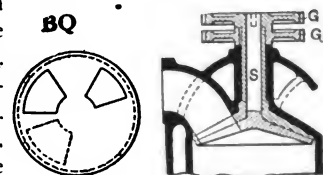
#### Hiscock Concentric Piston Valves

The piston valve shown in Fig. BP is the invention of H. W. Hiscock and A. L. Reeves. The two pistons, A and B, reciprocate in the valve chamber placed parallel to the working cylinder. The valve A is closed at the top by a cap C, while the valve B is open at the top. Both valves have slots cut in them which register with the port E according to the cycle. When the inner valve C is lowered the gas can enter into the cylinder over the top of the cap, from the intake manifold which is attached at I. When the valve A, however, is raised in the position shown in the illustration the exhaust gas escapes through the two hollow valves and out through the passageway F. In any intermediate position of the two valves the ports are closed.



#### Mercedes Valveless Motors

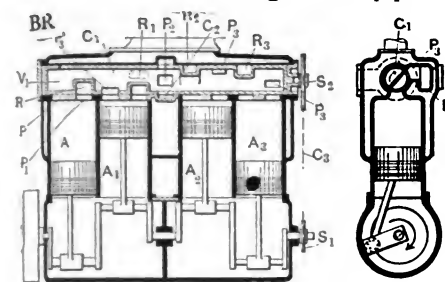
The Mercedes valveless engine is shown in Fig. BQ. The idea is very simple and needs little explanation. In the cylinder head of a motor operating on the four-cycle principle there are two concentric, concave discs, each attached at the upper extremity to gearwheels G and G1. The valve A is attached to G1, and the valve B, whose spindle S passes through the hollow spindle of the valve A, is attached to the gear G by means of a key. Both valves are provided with ports and rotate in opposite directions. The valves are rotated by an overhead shaft through gearing.



#### Niclausse Single Rotary Valve

The section of the motor seen in (BR) shows the method employed by G. & A. Niclausse, of France, of controlling the intake and exhaust gases of a four-cylinder motor working on the four-cycle principle. The cylinders A, A1, A2, A3 are provided each with two ports in their heads shown at P and P1, which are controlled by the rotating valve V1, working in the chamber C1, which has a central annular chamber C2

communicating with the gas inlet pipe. Ports P2 are made in



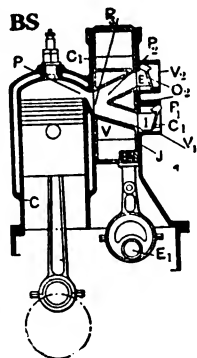
the portion of the valve V1 opposite to the annular chamber C2, which ports place the inside of the valve in communication with the chamber C2 and therefore with the admission. The

valve V1 is provided

with four ports P3 set at suitable angles to one another and adapted to the place opposite the opening P in the head of the cylinders in such a manner as to place the cylinders in communication with the gas admission. An exhaust pipe E in connection with the casing C1 by passages, which lead into the pipe in planes corresponding to the exhaust ports P1. The valve V1 is provided in this plane with recesses R, R1, R2 and R3, set at angle to one another, which serve to place the heads of the cylinders in communication with the exhaust. The valve chamber is surrounded by a water-jacket, which is the continuation of that surrounding the cylinders. Valve V1 rotates at half speed of the crankshaft and is driven by means of a chain C3 from the sprocket S1 to the sprocket S2.

#### Payne Piston Valve

The gases in this motor, shown in Fig. BS, are controlled by a reciprocating cylindrical piston valve V which is parallel to the axis of the working cylinder C and adapted to be reciprocated with a gas-tight fit within a cylindrical valve chamber C1 cast on one side of the main cylinder C. The cylinder port P and inlet and exhaust ports I and E respectively open into the valve chamber C1, on opposite sides of the same, but not in the same plane. The valve V is provided with two ports P1 and P2 which converge toward one another, on the side adjacent to the cylinder port P and transversely through the cylindrical valve body.



The ports P and P1 in the valve may be arranged so that they unite in a common single port P3 on the side which control the cylindrical port P, while their opposite ends diverge and may be any distance apart. The arrangement is such that one of the ports P1 or P2 in the valve is open at its inner end to the cylinder port P during the compression and firing strokes, so that the valve proper is not subjected to any side pressure. The other end of the port would be covered and closed by the solid wall of the valve casing, which takes the pressure. The inlet and exhaust ports I and D, which are formed in the outer wall of the valve chamber, are provided with automatic non-return check valves C1 and C2, which may be furnished within and carried by the valve cases V1 and P2, thus preventing the exhaust gases being sucked into the cylinder during the suction stroke. The valve is caused to reciprocate by the eccentric E1 driven by the suitable gearing from the crankshaft and attached to a stud extension of the valve by an arm and a pin.

#### PASSING OF THE OLDEST VEHICLE SHOP

What was the first vehicle plant in Columbus, Ohio, recently felt the march of progress when it was torn down to make room for new buildings. The factory known in early days as the Luckharpt Wagon Shop was said to have been the first vehicle plant west of the Alleghenies, and built many of the first vehicles used there, and was a general repair shop for stage coaches. Of late years it has been used as a dwelling.

#### WEIGHT AND STRENGTH

The correct proportioning of the strength of the materials employed in the construction of the chassis to the load expected to be placed upon it is of very great importance.

The weight of the bodywork depends upon the style, number of the seats, character of the finish and detail of the accommodation. Bodies made largely of stamped steel sheets are heavy in proportion to their size as compared with those made entirely of wood, putting aside the question of durability.

The weight per seat is greater in a two-seated car than it is in a seven-seated one, whether two open or two enclosed cars, with metal or wood panels, be compared. The accessories for a two-seated car and a seven-seated one vary very little in quantity and weight, so that it does not follow that because a car is only a two-seated one it is therefore a very light one.

By reducing the individual seating accommodation to the smallest dimension, and the fitting of a cape hood of the lightest description, it is possible to get a fairly light body if very light timbers are employed, but the stepboards and mudguards can hardly be reduced in size or weight, if they are to retain their efficiency, and the accessories, spare wheel, tools, accumulators, generator, spares, lubricants, fuel, etc., are of the same weight for the light car as the heavier, and the reduction in the weight of the body may not be so great as to compensate for the reduction in the comfort of the seating accommodation.

When the weight of the total load to be carried on the chassis frame has been ascertained, estimating as closely as possible the load that is not fixed or part of the accessory load, the decision should be made as to the horsepower necessary for its transport. This necessary power, as expressed by any agreed method of rating, has a proportion which should not vary much to the necessary weight of the chassis as apart from the total load.

Given a stated load to be carried and its disposition to the chassis frame, that frame must be of sufficient strength to withstand the stresses imposed on it by the overall load under all running conditions.

The object of constructing the car is to carry passengers, and the number of these and their comfort and the style in which that comfort is attained constitute the first part of the problem before the designer. All calculations, to be of advantage to the efficiency of the machine, must be based upon this part of the problem.

If the passengers could be turned out of a machine like so many cans of goods, then the problem would be greatly simplified. As it is, if the proper means were taken to ascertain the actual finished weights of bodies and all of the accessories which are not fixed parts of the chassis, it would be found that there could be stated an average weight per passenger seat for each type of body, and an average disposition of that weight per foot-run of body space on the chassis. It is on this foundation that the strength of the chassis and the power of the engine must be calculated. When the load to be carried is ascertained, it is possible to decide what is the proper size of tire and pressure to use on the car. The less resilience or bouncing of the tire when running, the greater the life of the tire, all other things being equal. The disposition of the total load on the axles has a wide range in actual practice.

This disposition of the load on the axles is one of the problems at present before the designer which have not been solved, although it is at present receiving considerable attention. The greater part of the dead weight is on the forward half of the chassis frame, and the greater part of the varying load is on the rear part. This variation is not easy to proportion in practice, for in the case of large seven-seated cars the load may be towards the centre on the two front seats and the two foremost ones in the interior or on the three rear seats entirely, counting the weight of the driver as part of the fixed and necessary load. Possibly a little ventilation of the subject may

lead to a reconsideration of the positions of the various seats, so that the load may be brought more towards the centre of the car and within the wheelbase. The placing of the front wheels further forward would help, but this lengthens the wheelbase at a point which is undesirable for ease in turning.

Theoretically, there is a fixed proportion of the load for each axle, if the greatest efficiency is to be obtained from the engine. What is the correct proportion does not appear to be ascertainable at present.

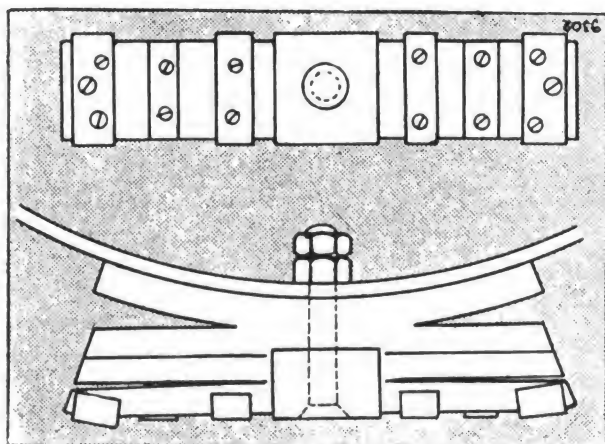
The proportionate working strength of all materials to the ultimate strength is known, and if the ultimate stress on the chassis frame, due to the load under running conditions, is known, the proportionate sizes and strength of the materials employed can be ascertained, and a car built which will not be any heavier than is absolutely necessary to secure safety and economical running.

### A WOODEN TIRE

A wooden tire has been produced by J. H. Knight, in England. Mr. Knight is one of England's pioneer motorists and motor engineers. So early as the year 1895 he designed, built and ran a two-seated paraffin car, which vehicle was shown running at the opening of the first motor exhibition at the Crystal Palace, in 1896, and was the first two-seated motor car built in England. In other branches of engineering Mr. Knight has made his mark, and the Trusty oil engine—a popular and efficient type over a decade ago—was one of his most profitable and practical inventions.

The general appearance of this tire, as may be seen by the accompanying illustrations, is against its ready adoption by town-car owners, but it has been devised not so much for town carriage use, as for hard service on country roads and tracks, on the wheels of commercial vehicles.

Mr. Knight chose wood for his tire because it is one of the most elastic of materials, and it retains its elasticity for a



This shows how the blocks are shaped and armored.

much longer period than rubber or other substances of a like nature, provided it is not stressed beyond its elastic limit. He quotes the archer's bow as an example of how wood will retain its elasticity for 50 years or more.

In the first place a wooden tire must be both cheap and reliable; it must also resist wear to an extent comparable with rubber, must be resilient, show no tendency to part from the steel rim of the wheel, and it should not damage the road over which it travels. Time, and the tests which Mr. Knight is now conducting, can alone prove to what extent this new tire will meet those requirements. His first wooden tire was fitted to a 34 inch wheel, and without the intervention of a carriage spring between the axle and the load platform, the wheel, with a load of between 400 and 500 lbs., was run over such obstacles as bricks with perfect ease, and without damage to the tires. A pair of similar tires were then fitted to the driving wheels

of a car and driven over many hundreds of miles of country lanes, with results which give promise of great success.

It is not claimed that these tires are as resilient as pneumatics, but that they are more resilient than solid rubber tires, and it would appear that their cost will prove to be much lower than that of rubber.—From Commercial Motor.

### SECRETARY McCULLOUGH WANTS MEMBERS OF N. I. & V. A. TO GET BUSY

E. W. McCullough, secretary and general manager of the National Implement and Vehicle Association, has issued a bulletin to members urging them to write to their representatives in Congress protesting against the proposed abolishment of the commerce court and the bureau of manufactures and bureau of statistics of the Department of Commerce and Labor, the house committee on appropriations having failed to report an appropriation for these departments. In the opinion of the association, the commerce court and the bureaus mentioned are rendering important service to business interests.

Wm. Butterworth, chairman of the executive committee, Paul E. Herschel, of the tariff committee, Mr. Silver, of Salem, O., and Secretary McCullough had occasion while in Washington recently, to investigate a number of matters in connection with the work of the two bureaus mentioned, and obtained a better conception of the great value of the work they are doing. "As to the commerce court," says Mr. McCullough, "whatever criticism may be made of its work thus far, its ability when properly organized to facilitate the disposition of appeals from the Interstate Commerce Commission cannot be denied, and it should be continued."

Mr. McCullough also asked the members of the association for an expression of their views on the Campbell bill which is now under consideration in the House. This bill makes it unlawful for any person, firm, company or corporation to place upon the market for interstate or foreign commerce any product of manufacture not containing the name and address of the manufacturer. A large number of replies have been received. Some of the manufacturers are in favor of the bill, and others are opposed to it. The matter will be discussed at a meeting of the executive committee to be held within a short time.

### NOTICE OF C. B. N. A. CONVENTION

Office of the Secretary and Treasurer, Mt. Vernon, N. Y.,  
May 1, 1912.

The Fortieth Annual Convention of the Association will be held in Atlantic City, New Jersey, during the week commencing September 22, 1912.

As the Convention and the Association's Exhibition were a great success last year, there is very great promise that this year will be even better.

Arrange now to be present and enjoy mingling with the other members in the good fellowship such an occasion so richly affords, and you surely will be pleased with all you see and hear in the company of your business associates.

The annual meetings will be held on September 24, 25 and 26, and the exhibition of parts of vehicles and automobiles and materials pertaining to the vehicle trade will be from September 23 to 27, inclusive. Both the meetings and the exhibition on Young's million dollar pier.

September is one of the most delightful months in the year in Atlantic City, so you are assured of a pleasant time, and your visit will be a memory not soon forgotten.

Come and meet your friends and confirm your opinion that it is good once a year to meet your friends and associates and exchange greetings and views on business. You will never regret the experience.

By Order of the Executive Committee.

HENRY C. McLEAR, Secretary.



## Porto Rico—Its Opportunities.

The harness manufacturers as well as the maker of the horse-drawn vehicle should, we think, give more attention to the "foreign" trade opportunities lying at the threshold of the front door.

Porto Rico is one such opportunity of prime importance. Its ports are available by weekly steamers, its business transaction may be conducted through the medium of the language of our country, the facilities for collections of accounts due are prompt

to our readers. The wagon makers ought to be especially interested in the matter.

Following is the Secretary's account of conditions in Porto Rico:

January 17, 1912.

Sir: The transportation of passengers and freight from the sea ports to the interior and across the Island of Porto Rico has always been an interesting problem. The island is only about



and admirable, the kind of wares we make are adapted to the needs of the people. This, it seems to us, is opportunity spelled with a capital letter.

We had heard of the splendid roads that make the island famed, and we were curious to know more about the conditions of vehicular transportation for the benefit of our industry, hence we applied to the government of Porto Rico for any information it could supply conveniently.

The Secretary to the Government, Mr. Carril, most courteously interested himself in our letter, securing photographs

35 miles wide and 100 miles long. Its area is broken by several ranges of mountains. The short distance to be covered and the expense of construction through the mountainous regions has up to the present time made railway transportation across the island impracticable, and railways are confined to the level country along the coast.

Thus individuals having business in the interior must still resort to their own resources for transportation for themselves and their merchandise to points distant from the seaports. In the early days transportation over the trails in the interior



which we reproduce, and writing a brief article on the subject which so completely covers the subject of our inquiry that it gives us much pleasure to reproduce it for benefit of readers.

We direct particular attention to what the Secretary has to say concerning the demand for vehicles and harness for use on plantations. We hope his suggestions will prove profitable

was by means of pack animals. Eventually the Spanish Government did much towards solving the problem by the construction of what is known as the "Military Road" from the City of Ponce on the south coast over the mountains to the City of San Juan on the north. This road is noteworthy on account of the beauty and grandeur of the scenery through which it passes, the engineering difficulties that were overcome



along its route, and the manner of its construction, which is excelled by few other roads in existence. The completion of this road was followed by the construction of others, which made the general use of wheeled vehicles possible. From the time that the first road in Porto Rico was completed up to the present the commodious ox-cart has been almost universally employed for carrying heavy merchandise. The American four-wheeled farm wagon, drawn by mules or horses, has to some extent replaced the ox-cart, although the more ancient means of transportation with the slow-going oxen seems to be the more favored where the prompt delivery of goods is not an immediate factor.

The high-power motor truck is rapidly becoming a formidable competitor of the drawn vehicles. Firms in the interior that two years ago dispatched daily to the seaports long trains of ox-carts laden with products, to return laden with imported merchandise, now employ instead automobile trucks that carry many times the quantity that their ox-carts carried, and make more trips in a given period.

There has been a similar evolution in the transportation of passengers. Less than a decade ago the saddle horse and the carriage were the only means available for traveling in the



interior. The demand for more rapid transit, together with the network of excellent highways throughout the island, have both contributed toward the substitution to a remarkable degree of the old means of transportation by automobiles. At the beginning of the year 1910 there were only about 100 automobiles in the island. Today there are more than 600, among which are found some of the best makes in the United States and Europe. A few more machines are brought on every steamer from the United States and the registration numbers are constantly increasing.

Nevertheless, there has been, and still is, a wholesale demand for modern horse-drawn wagons for use on fruit or other plantations that are not of sufficient extent to warrant the construction of private tramways.

Owing to the unusual amount of moisture in the atmosphere, those wagons are the most popular whose manufacturers have devoted special attention to the necessary seasoning of materials to adapt them to use in tropical countries.

As of possible interest in connection with the information furnished, I enclose herewith five photographs showing the various means of transportation to which I have referred.

### THE CREDIT IS DAIMLER'S

Any history of automobilism must in large part be a history of the Daimler vehicle, for Gottlieb Daimler was undoubtedly the pioneer of the movement by his inventions and his improvements thereon. It was in 1885 that he successfully put upon the road the machine—a cross between the old hobby horse and the modern motor bicycle—from which was to evolve the self-propelled vehicle of the present day. In 1881 the first

Daimler machine had developed via the tricycle into the Daimler quadricycle, upon which is based the Daimler cars now in use. The quadricycle was exhibited at the Paris International Exhibition of 1889, and in that year the French rights for the manufacture of the Daimler engines was shared by M. Levassor, under whose guidance the new means of locomotion rapidly developed. Before another five years had elapsed, Levassor and his fellow engineers were constructing thoroughly practical and reliable motors.

The success of the Paris-Rouen race in 1894 aroused the interest of the British public in the new motor vehicle. For the purpose of influencing public opinion in favor of the motor carriage and drawing attention to the stupidity of the existing road locomotion Acts, a tour of England was undertaken in 1895 by F. Ellis and F. R. Simms on a Daimler-engined car. This missionary effort was followed by an exhibition of horseless carriages—for cars of other makes were now coming into the country—at Tunbridge Wells, and another at the Imperial Institute in the spring of 1896. All this had its effect upon public opinion; a bill was passed to legalize motor cars on the highways, and in November, 1896, took place the Emancipation Run to Brighton.

The movement now spread like fire, and Gottlieb Daimler lived to see the new and promising industry firmly established. He died in 1900. The Daimler Co., first in the field at Coventry in 1896, has been in the forefront ever since.

### FLANDERS TALKS ABOUT LEAVING STUDEBAKERS

Walter E. Flanders may leave the Studebaker corporation, of which he has been third vice-president and general manager during the last four years, according to an article in the *Detroit News* of May 11. He says his future is unsettled. He denies that he has purchased the interests of B. F. Everitt and William E. Metzger in the Metzger Motor Co., as rumored.

"I have contemplated several things and have talked with various business men as to different plants, but no conclusion has been reached and I am almost as much in ignorance as to my future as you are," said Mr. Flanders.

"That is quite possible," said Mr. Flanders, when asked if his departure from the Studebaker corporation might result in legal difficulties. He is said to be under a contract with the corporation, which has three years yet to run.

"I believe I am not under contract," continued Mr. Flanders. "I have been given very little to do around there lately. They claim the right to use my name in the event of my quitting the company. I do not believe they have that right. That will probably result in further entanglements."

"While it is true that there is a deal pending which may bring Mr. Flanders to the Metzger company, it is absolutely untrue that either I or Mr. Everitt will dispose of our interests in the concern," said Mr. Metzger. "There is nothing definite to announce as yet, but there will not be any change in the personnel of our staff. There will be additional capital to a large amount brought into the company which will be used to extend the business. The present plant is under building alterations that will almost double its capacity and another plant will be built. And you may depend on it that it will be built in Detroit. We will turn out 15,000 cars next year."

### CHANGE IN POSITION

Charles A. Trask, formerly factory manager of the Carter Car Company, who recently became manager for the Henderson Motor Car Company, of Indianapolis, has returned from an extended trip through European automobile manufacturing centers, and entered actively into the production of the new Indianapolis automobile. Mr. Trask is quite prominent in the Society of Automobile Engineers, being chairman of the Committee on Papers.

## Wire Wheels—Artillery Wheels

Here Is a Chance to Except to the Opinion of The Motor World

Controversies regarding the relative merits of wire wheels and the very much more used artillery wheels have been numerous, and while it now is generally accepted that if the factor of strength and safety with wire wheels is no greater, at least it is as great as with the artillery type, the question of the effect of each type on tire wear still remains. Such data, recently obtained through a series of experiments made by one of the largest British manufacturers, the Daimler Co., however, tends to show that under certain conditions wire wheels possess advantages in this respect, which is still further supported by the opinion of a number of members of the Automobile Club of America who recently were canvassed in an effort to ascertain their views on the economy and efficiency of wire wheels.

As a result of the canvass it developed that of four members whose cars were equipped with wire wheels none had an objection to offer. Though they were unanimous in their views as to the superior strength of the wire wheels, only one could state positively that their use resulted in a saving in tire expense. "My calculation is that I get 1,000 more miles of travel out of my tires on the wire wheels than I did when I used wooden wheels," he said. Several others advanced the opinion that at least the wire wheels did not wear the tires out any faster than wooden ones, and there was a general feeling that tire depreciation was less with wire wheels than with the more commonly used wooden ones.

The experiments which were carried out by the Daimler company were made by that department which has to do with the renting of cars in London, and a careful record was kept of all repairs and replacements. The tires used were of the non-skid variety, 37x6, and as all of the cars to which they were fitted were practically identical, with heavy covered bodies, the figures obtained are instructive in that they show that with wire wheels the average number of miles per cover obtained was greater by 1,404 miles than that obtained when the tires were fitted to wooden wheels.

For the test, 100 covers were used, half of them being placed on wooden wheels and the other half on wire wheels. The total mileage obtained from the 50 covers taken from the wire wheels aggregated 172,731 miles, an average of 3,454 miles per cover, as against an aggregate of 102,524 miles, giving an average of 2,050 miles per cover for those fitted to artillery wheels. Though the tires were of the non-skid variety, it is not stated whether they were of the steel-studded type, though it is probable that they were not.

### BELGIAN KONGO RUBBER

Consul General H. W. Diederich, Antwerp, reports as the Belgian Kongo has become, almost overnight, one of the chief rubber-producing countries, Antwerp has naturally also become one of the rubber markets of the world. The importations of rubber into Antwerp amounted to 4,336 tons in 1911, as against 4,058 tons in 1910. Of these imports, 3,176 tons came from the Belgian Kongo in 1911 and 3,105 tons in 1910.

### BUSINESS TROUBLES

On April 5, E. G. Ruder, receiver for the Hamilton Spoke & Hub Co., filed a motion with the court setting out he had \$7,636.06 on hand from the sale of the plant and asked directions as to how to pay the money to creditors.

Involuntary proceedings in bankruptcy have been filed in the United States District Court, Atlanta, Ga., against the New-man Buggy Company, the Muncie Wheel Company, of Muncie, Ind., being among the leading creditors.

Improved methods of manufacture and changes in design have made it possible to continue the use of the wood wheel in the face of enormous increases in load. With the development of the heavy commercial vehicle, the wheel problem is receiving renewed attention.

Despite the use of kiln-dried wood and best manufacturing processes wood wheels continue to dry out during the hot weather with more or less bad results. Because of the heavier loads, the loosening of commercial vehicle wheels is serious. With truck wheels an almost unnoticeable amount of lost motion soon may develop into weakness, as indicated by the creaking. The source of the difficulty is a certain percentage of moisture present in the wood at the time the wheel is made, and which gradually is absorbed by the atmosphere following long periods of dry weather.

The old-time remedy for a rattling wheel was to reset the tire. One remedy presents itself which is inherent to the artillery type of construction. That is the setting up of the hub plates. This has the effect of tightening the wheel in the center, thereby taking up any side play. It does not effect a circumferential adjustment, so the adjustment should not be long delayed. Once the paint has begun to go the hub bolts should be tightened and the broken paint retouched to exclude moisture. Working of the spokes means wear and further looseness and if the hub is neglected it will not be long before the outer ends of the spokes begin to loosen in the felloe. With the automobile wheel this difficulty is beyond practical remedy.

As between the artillery and the carriage type of wheels there is this point of difference, that former is tightened from the hub, the latter is drawn inward from the felloe by resetting the tire. A carriage wheel, the spokes of which have worked loose in the hub is about as difficult to restore to efficiency as an artillery wheel, the spokes of which have become loose in the felloe. For the artillery wheel fitted with a flat felloe band, such as is employed with certain types of demountable rim and also of the sort required by the new standard specifications of the S. A. E. for solid tires, the resetting of the band is possible, though difficult and expensive.

### VEHICLE DRAFTSMEN'S SCHOOL IN BOSTON

A class in carriage and automobile body drafting was conducted during the past winter months in connection with the evening industrial schools of the city of Boston, Mass. The privileges of the class were free, the city providing the instructor, room, light, drawing boards, instruments and paper.

The course was divided into two terms, the class meeting twice each week (with an intermission for the holidays), 36 evenings altogether. The pupils, 16 in number, were all actually employed in carriage and automobile factories, and nearly all of them were men of mature age. As the course proceeded, scale drawings were made of seats, a spider phaeton, a touring car and a limousine body. Some studies were also made of coupe pillars and bottomsides on a larger scale.

The course was a great success and is likely to be continued hereafter. George H. Smith, 5 Lamartine Terrace, Jamaica Plain, Mass., was in charge of all the arrangements directly concerned with the school, and to him much of the credit must be given for the success of the undertaking.

## ELECTROPLATING IN METAL INDUSTRY

The future of electroplating, like that of other commercial enterprises, will depend upon the progress made in the art by individuals or by the concerted action or cooperation of men who understand the essential details of its chemical, electrical and mechanical requirements, says Charles H. Proctor.

For years the art has remained practically dormant chemically. Very little has been accomplished since the days of Elkington, Becquerel, Heeren, Roseleur, Von Leutchenberg, Neidinger and other whose methods and formulas have remained practically standard up to the present time.

But a new era lies in the future. It is gratifying to note electrochemists and metallurgists, who have devoted the product of their brains to the mining industries, are now turning to the greater possibilities of the electro-deposition of metals. New fields are constantly being opened up for intelligent workmen, so that instead of electroplaters being in less demand in the future, it will be found that there will not be sufficient numbers.

Mechanical plating tanks and barrels of almost endless variety have been put on the market. Mechanical polishing and burnishing methods, that brought forth economical results in manipulations, have saved considerable money in the cost of production, which has heretofore been almost prohibitive in the finishing of small articles. By the application of mechanical electroplating much has been learned that heretofore has not been thoroughly understood. Constant friction by agitation caused greater internal resistance and necessitated denser solutions and greater voltage to produce results as satisfactory as those secured from the still solutions formerly employed. Electro-galvanizing and mechanical plating requiring greater voltages have brought forth the three-wire system. The dynamo developed for this purpose affords a range of from five to ten volts, making the energy created satisfactory for still solutions requiring up to five volts, and for mechanical solutions needing up to ten volts. Such dynamos are replacing the older types because of their particular advantage in developing the high and low voltages required.

The platers of the United States and Canada should feel highly gratified that they have been able to maintain a standard of finishes equal, if not superior, to those of any other country. Germany, France and Austria, however, have paid more attention to the uniformity of deposit. Many finishes are produced in the above countries that are unknown in the United States, and vice versa.

The introduction of "Trisalyte" for solutions in the United States will prove of much value to the plater. The composition of these trisalts, being uniform in quality and perfectly balanced, will produce more satisfactory results in the various deposits than has been obtained in the past. Such solutions are prepared for electro-galvanizing, copper, brass, bronze, silver and gold plating. These salts are used exclusively in Germany, and have been on the market there for several years. In France and Germany bright nickeling has been brought to a successful issue. If a polished surface is immersed in the bright nickel bath the deposit will remain bright even though plated for several hours, and will require no further polishing when removed from the bath.

The Sangamo ampere-hour meter will no doubt prove of great value in determining the actual amount of metal deposited in a given time, so that eventually a system of costs—so much desired—will be installed in the plating department; and, with the introduction of the Rojas method of electrochemical metal coloring the present status of electroplating can be considered as satisfactory.

The past of electroplating must always be interwoven with the present and the future. The secret of precipitation has never been satisfactorily explained. The question is often asked: "What is electricity?" So the plater often wonders what causes those particles of metal to become so evenly distributed over the metal or metallized non-conductive surface,

but he cannot explain why. The old myths of unsatisfactory deposits being due to too much sunshine, too much cloudy weather and a hundred and one other imaginative thoughts, have, like the myths of the middle ages, been explained by scientific study of cause and effect.

Recently I paid a visit to one of these modern plants with a plating room linked with the past. The results being produced were unsatisfactory. Several thousand gallons of solutions, consisting of brass, copper, bronze and nickel were in daily use. The brass deposit varied greatly in color, and was otherwise inferior. In looking over the plant for the probable cause of this variation in color my attention was immediately drawn to the absence of a voltmeter. It is a well known fact that a uniform deposit from a number of solutions depends not only on the uniformity of the voltage at the tank terminals, so that unless evenly balanced, the deposit will not be uniform.

Variation in voltage produces variation in color and a variation of internal resistance in the various tanks, and not the incompetency of the plater, is the primary cause of lack of uniformity of deposit.

Looking back more than a quarter of a century into the past of plating, one is amused at the ridiculous thoughts and ideas that entered into the mind of the plater as to the probable cause of the troubles he encountered.

The National Electroplaters' Association has been of untold mutual advantage to its members, producing results from exchange of thoughts, ideas and experiences. If Andrew Carnegie or some other great leader in the metal world could understand its requirements, there is no doubt their financial assistance would be forthcoming to maintain the art of electroplating in this country in the foremost ranks of the world. With a scientifically-equipped laboratory and competent men who are experts in their various lines, the solution of many problems could be accomplished and great results accrue, which would be of advantage not only to the individual plater, but to the country at large.

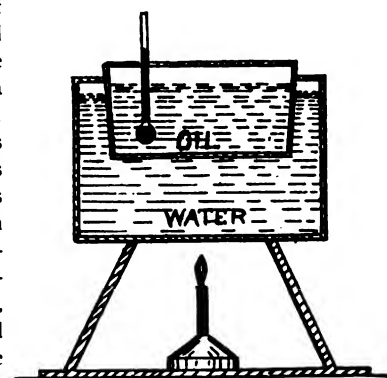
## TESTING OILS

There are several tests which anyone can apply without the use of special apparatus, and tell something about the grade of lubricating oil he is getting.

To find the flash point, place a small amount of the oil to be tested in a pan, as indicated in the accompanying illustration, and heat by means of the lamp beneath. As the oil heats, pass a match above the surface. After a time a flash is seen when the match is applied, but it disappears as rapidly as it came. This shows that enough vapor has been produced to mix with the air and form an explosive mixture. The temperature, given by thermometer, at which this occurs, is called the flashing point. At some higher temperature, if a match is applied, the oil takes fire. This latter temperature is known as the burning point, and may be a considerable number of degrees above the flashing point.

To detect the presence of an acid, dissolve a small amount of sodium carbonate in an equal volume of water. Place it, together with the oil to be tested, in a flask breaker and shake thoroughly. The quantity of precipitate will be a gage of the amount of acid present.

To detect the presence of grit, drop a small amount of oil on white or very light-colored blotting paper. The oil will be absorbed, and the grit will be visible as small black specks on the blotter.



# PUBLIC CAB SERVICE

## How It Is Regulated in Paris and London and What We Have to Learn in America

My trip to London, says Wm. P. Eno, the writer of the article in *Rider and Driver*, and Paris in 1909 was undertaken to learn the details of their public carriage service, as well as to further investigate street traffic regulation.

Before this investigation, I was aware how far behind we were in licenses and examinations for motor drivers and cab drivers, records of accidents, complaints, violations of regulations, unfit horses and vehicles, etc.

The skill and precision of the London cab drivers is remarkable. The hansoms go almost as fast as motor cars—so fast, in fact, that it seems reckless. The drivers have almost without exception what to the horseman is known as "hands"—that is, by a constant light touch of the reins they communicate confidence and support to the horse and always have him in perfect control, both to stop and turn him or pick him up if he slips, trips or stumbles.

The same quality of swift, sure and wonderful control possessed by the drivers of horses seems to be possessed by the drivers of motor vehicles, also, and supports the theory that the best motor drivers are those who are horsemen as well. The reasons for this are that most Englishmen are natural horsemen, and that no one can get a permit to drive any public carriage until he has presented himself at New Scotland Yard with the kind of vehicle he wishes a license for and fully demonstrated his ability to drive it skillfully and safely even on streets crowded with traffic.

All cabs and stage carriages and their drivers and conductors are controlled by the Public Carriage Office, which is a branch of the Metropolitan Police Department at New Scotland Yard.

Anyone desiring a license as driver or conductor must fill out a printed form of application for the kind of vehicle required, stating whether he has ever served in the Metropolitan police; army, navy, militia, police, post-office or any other public service; been refused a driver's or conductor's license; been convicted of or charged with any crime or summoned before a magistrate for any offense in London or elsewhere; been convicted of, or charged with, or summoned for, any crime or offense except what he may have already stated in answer to the preceding questions, and must state that his christian and surname are correctly recorded in the application. An officer of the public carriage office, assigned to this duty, must sign the application certifying that it has been read and signed in his presence.

All cabs and stage carriages must be brought to the Public Carriage Office for inspection before being put in service on the streets. The carriages and also the horses and harness must come up to certain standards, and must be brought back to New Scotland Yard at stated intervals to see that they are kept in fit condition. The tariff of each vehicle is placed in plain view on a white enameled plate, with black lettering. The number is on an oval plate of the same material. The result is that the public carriages are always in a reasonably good condition, and better than I have found them elsewhere.

The Public Carriage Office makes use of a most excellent set of blanks for regulating drivers, horses, carriages and harness, but the work of the office is confined to public carriages. In New York the system which I hope will be developed by our Bureau of Street Traffic of the Police Department should control everything within reason in connection with every vehicle, public or private, including horses, harness and drivers.

When a report is made of an unfit horse or vehicle, notice is served not to use it, and it is kept under supervision of the police until such time as it can be properly restored to service.

Complete records of all reports of claims, complaints, accidents, violation and convictions are inscribed in a set of books suitable for the purpose at the Public Carriage Office, and kept for future reference, and thus it is easy to ascertain immediately the history of a driver's service and discipline him when necessary, as well as to investigate the causes of accidents and devise means to reduce their frequency.

At the Public Carriage Office all articles left in carriages are deposited and kept for a certain time, and if not claimed are given back to the finders.

In London, as well as in Paris, and as is the case in New York, there is trouble with the inaccuracy of the taximeter. In both London and Paris they are examined, tested and sealed, but the drivers and owners have found ways of tampering with them and no taximeter has yet been invented that can be relied upon.

The method used in London of putting cab stands in the center of the streets is often very desirable. When the street so used is wide, it is slightly depressed in the center for about the width of a carriage and the depression connected with the sewer. This method keeps the dirt from horses and the gasoline from motors from spreading over the rest of the roadway.

In Paris all cabs and stages and their drivers and conductors are controlled by the Public Carriage Office of the Prefecture of Police. An examination of a public motor driver by the police is required to check off that which he has already passed under the requirements of the Department of Public Works for all motor vehicle drivers. There is also an examination for license required for the drivers of public horse-drawn vehicles, as to their ability to drive. There are schools for cab drivers in Paris, but the applicants who present themselves have no knowledge of how to drive, not even how to hold the reins. The examination of the Public Carriage Office in London is conducted by an expert driver, and the applicant made to show that he is able to drive safely under the worst of conditions. Outside of the examination of the drivers of horses the Public Carriage Office of Paris is very efficient. The examinations of drivers on their knowledge of the streets is rigid. There are about four thousand names of streets—one street often having several names in its length.

On certain days a committee sits as a court to pass on complaints and "proces verbal." One of the members of the committee is himself a cab driver. The offender is summoned and given ample chance to explain. If he chooses he can require the complainant to be present at the next meeting of the court, but usually the matter is disposed of in a few minutes by vote taken after the evidence is presented.

There are three classes of public horse carriages for the drivers of which a license is required. These are distinguished by the color of the license covers. The classes are: Voitures de remise, corresponding to our livery stable carriages; voitures de premiere, or first class, and voitures de place, or public cabs. The voitures de premiere classe have special stands, and they have no legal tariff, but a bargain is made before hiring them. The voitures de place, or public cabs, have regular stands and also cruise for fares. Different motor cab companies have different fares. These are designated by a mark

on the side where it can easily be seen, and the colors of the cabs differ also so that it is easy to distinguish them. The maximum tariff is, however, limited by law.

In London the driving is better than in New York, but if we required an examination of all motor drivers before obtaining a license, as they do in France, and a supplementary examination of all drivers of public motor vehicles, and an examination of drivers of public horse-drawn vehicles as is done in London, this would be remedied.

### THE CHASSIS FRAME AND THE BODY

There is a close connection between the manner in which the upper part of the chassis frame of a car is finished off and the ease with which a motor carriage body can be fitted that does not appear at the first glance, says *The Motor* (England). Some chassis makers finish the frames with a downward-swept part which is of some convenience if it is placed in the right position to take a small body of the single landaulet or coupe type—a servant's seat in front and a two or three seated rear body. With a four cylinder engine and a frame swept downward at just the right distance, a very nice coupe brougham or landaulet can be designed which will give a very easy step and access to the interior, with a wheelbase of about 9 ft. 6 in. But the mistake is often made of attempting to put a body of a larger type, to carry four or five persons, on a down-swept frame. Here the occupants of the occasional seats are often placed in an awkward position, for the floorboards, following the line of the chassis, have a downward inclination away from the seats, and the occupants are sitting with their feet on a slope away from them, and not rising towards them as when they are seated on the rear seats, thus obtaining a better position by the purchase given by the sloping footboard when the car is running over rough ground or the brake is suddenly applied.

Another form of frame is sometimes to be met with. The chassis designer has, perhaps, forgotten to make provision for some minor part in his design, essential to the working of the brakes or some similar part, and this is placed on the frame and above the level. If the supports extend over the whole width of the side member, then the foundation of the bodywork—the bottom side—has to be of sufficient substance to allow of these supports being cut out of it so that the underside of the floorboards may be clear; or a bridge of metal has to be constructed over this part, sometimes so placed that it is in the way of the heels of the occupants of the front seats and very objectionable generally. Another obstruction to the placing of the body framing on the chassis frame is the fitting of a cross member towards the rear when the chassis designer, not having satisfied himself about the clearance under the frame for the cardan shaft, allowing for the rise and fall of the frame on the springs, has this cross member cambered upwards for one or two inches, protruding above the level of the top of the frame for that distance. Here the floorboards of the interior of the car have to be fitted so that they will clear this metal work at least half an inch, and the side members of the body framing have to be made of a suitable size to carry the floorboards clear of this obstruction.

Then there is the upswept part of the frame to clear the rear axle. The usual allowance between the rear wheel tire and the underside of the mudguard is 7 inches, and if there is this clearance between the top of the differential casing in the centre of the axle and the top of the frame, the body builder can keep the underside of the body from touching the casing. It is of very little advantage to the body builder if the side members of the chassis frame, which is intended to take a six-seated car, either open or closed, are kept low from the ground and the rear part has to be raised some five or six inches above them to clear the differential, or if there is an unnecessary clearance behind for the rise, for the clearance may be in such a position that it is impossible to get a level flooring on the

interior without raising the framing and the floor boards. Many motorists in search of motor carriages must have come across instances of where the upward inclination of the floor just under the very wide rear seat has prevented them seating themselves in comfort.

Another of the points on a chassis frame which add to the difficulty of making a suitable body is the position of the bracket carrying the side levers, and the distance of the extreme outside point from the chassis frame. To enable the body to be lifted clear of the chassis for access to the gearbox, clutch, etc., or detached for repairs and renovations, the body should be made so that there is no difficulty at this point. Nearly all cars are now made with high sides to the front. About 90 per cent. of those at present in use have no means of access to the driver's seat from the off side, because the body is dropped between the change speed and brake levers, or, if these are both inside, there is a great bulge or swelling on that side over the bracket carrying the change-speed brake levers. This bracket has been known to extend to 7 inches outside the frame. Five inches is considered very moderate, and not very much ingenuity need be exercised to reduce this to 3½ inches. The effect of this reduction would be to reduce the size, and consequent weight of the bodywork in the fore part of the car, for, to preserve the symmetry of the front, both of the sides have to be alike, and however far the off side must be extended beyond the frame, the near side must follow suit. Besides, there is the question of the practicable doorway. There is really no good reason why the occupant of the near side seat should be disturbed every time the driver has to get down to start the engine or attend to any slight trouble that may arise. The provision of a practicable door on the front off side of a car depends largely upon the position and form of the bracket for the levers and its distance from the side members.

A carefully built limousine or sociable carriage is lighter in construction and weight than a landaulet, and there is consequently some saving in weight in their use, and of the value of this every chassis manufacturer is fully aware. The effective reduction in the weight of the motor carriage complete for the road can only be effected by the subordination of all the parts to the one object, consistent always with due provision for the work to be done, either in the way of total load or the speed at which the car is to be run, for the load added by the owner is nearly always a constant regulated by the number of seats occupied.

### MALCOLM McLEAR

Malcolm McLearn, son of Henry C. McLearn, secretary of the Carriage Builders' National Association, died at his home in Newark, N. J., May 10. It was the culmination of a very long period of invalidism, which, however, until latterly gave promise of recovery. The funeral service was held in the First Presbyterian Church in Newark, May 13, thence the body was removed to the family plot in Wilmington, Del.

Mr. McLearn was a lawyer who had already scored. He had been identified with the Newark city government in several judiciary capacities. He was very popular, and, had he lived, the promise of his future political career was bright. A widow and children survive.

### RONINGER TALKS TO VEHICLE MEN

W. H. Roninger, who recently made a journey to Panama with the Business Men's League trippers, spoke on "The Canal Zone" at the monthly meeting of the Implement, Vehicle and Hardware Association of St. Louis in the Planters' Hotel, April 8. A banquet preceded his address. The evening's entertainment was in charge of Joseph A. Schlecht, J. O. Cathey and A. Schlacht, Jr. About 100 men were present.



## TECHNICAL SCHOOL CLOSING AND EXHIBITION

The school for the making of vehicle draftsmen, so long and successfully maintained by the Carriage Builders' National Association, closed its thirty-second successful season on April 8. The exhibition was given April 15.

The school is now housed in the superb building operated by the Mechanics' Institute at 20 W. 44th street, New York City, and there on the evening named a large and interested audience gathered to inspect the work and progress of the young men.

We present an illustration of one of the rooms of the school showing the pupils at work, as much as anything to give an

students went a step further and actually made a touring body one-half full size from his original design. This body was well worked out and perfectly constructed ready for the panels, and attracted a great deal of attention. Similar work was done last season on a limousine body. The exhibit as a whole was fully up to the best previous one, and was said by some to be the best the school has ever made.

There were six graduates this year, four from the day class and two from the evening class.

The names of the graduates are as follows: Royal Herbert Swaffield, John Dobben, Charles Allen Woodfield, George Klix, Charles Novak, John Votypka.

The school has a correspondence department which is kept open the year round and pupils may enter at any time. Full



idea of what perfect quarters have been prepared for the purpose of instruction. It would have been agreeable to show the other rooms used. This is the first picture of the premises appearing in a technical or other publication so far as we are aware. It ought to please those seeking information.

At the exhibition many foremen, draftsmen and superintendents from the local factories were present and examined the specimens of work on exhibition. Much favorable comment was heard about the original designs of automobile bodies, and the scale and full size working drawings of same showing the best manner of framing the various parts together, and the "pricking off" of parts requiring this treatment. One of the

particulars in reference to all departments of the school may be obtained by addressing Andrew F. Johnson, 20 W 44th street, New York City.

### WILL ESTABLISH BRANCH AT ALBION, MICH.

Jackson, Mich., capital will establish a branch factory at Albion for the manufacture of automobiles. The factory will be run in connection with the Albion Malleable Iron Works and will be financed by the Hayes Wheel Company, of Jackson.

At present the Hayes Wheel Company is not making its own hubs, buying them, instead, from jobbers. With the establish-

ment of the branch at Albion, the hubs will be made under the immediate supervision of superintendents from the Jackson factory. Stanley Porter will have charge of the Albion branch.

The old Prouty plant at Albion will be occupied by the Jackson branch of the Hayes Wheel Works, the connection of the plant with the Albion Malleable Iron Works making it advisable to have the branch in Albion. The placing of the necessary machinery and slight remodeling of the buildings will be undertaken at once.

It is expected that about 50 or 75 men will be put to work when the new branch is opened and if the innovation is a success more than 100 men will be employed after the first three months.

The Hayes Wheel Company is a comparatively new industry in Jackson and it has prospered greatly during its few years operation. Wheels are made for many of the leading automobile factories in this section of the United States and more particularly for the Michigan automobile factories.

### **CINCINNATI CARRIAGE MAKERS' CLUB INSTALLS OFFICERS**

The April meeting of the Cincinnati Carriage Makers' Club was held Thursday evening, April 11, at the Business Men's Club. The newly elected officers were installed, as follows:

President—Henry Rattermann, Rattermann & Luth.

First Vice-President—Jas. F. Taylor, American Oak Leather Co.

Second Vice-President—W. T. Denis, Cincinnati & Hammond Spring Co.

Secretary—Wm. H. Young, American Carriage Co.

Board of Governors—Henry Rattermann, Jas. F. Taylor, W. A. Sayers, C. B. Vandervort, W. H. Young, W. T. Denis and Jos. A. Neihaus.

#### **Committees for the Ensuing Year.**

Entertainment—C. W. Steele, chairman; H. C. Drake, W. T. Denis, I. O. Bauer and Jos. Wallenstein.

Press—A. S. Brown, chairman; O. A. Timberlake, Harry Levison, Harry McBride and Harry Roettinger.

Freight and Classification—Earl Galbraith, chairman; Theodore Luth, C. W. Shipley, W. A. Sayers and P. P. Hunter.

Technical School—W. A. Sayers, chairman; B. L. Craig, C. B. Vandervort, W. J. Brunsman and Julius Lang.

Insurance—H. Pollock, chairman; Albert Morsbach, M. J. McNamara, Frank Nelson and Jason Schneider.

Good Roads—O. E. Walker, chairman; E. F. Alf, C. F. Egolf, Wm. Engelke and Wm. J. Kauffman.

Labor—P. P. Hunter, chairman; George S. Brown, E. V. Overman, Chas. A. Fisher and Albert Armstrong.

June 15 was the date selected for the June outing.

Addresses were made by P. P. Hunter, O. E. Walker and others, the former giving an entertaining history of the carriage industry. Mr. Walker talked on the subject of good roads.

City affairs and the present methods of municipal administration, as compared with those of the past, were explained to the members of the Carriage Makers' Club at the Blue Grass Inn, in the Kentucky Highlands, on the evening of May 9, by City Solicitor Bettman and City Auditor Washburn.

### **ONLY ONE AUTO SHOW IN NEW YORK NEXT WINTER**

New York will have but one automobile show next winter, and it will be so big as to make necessary the use of two buildings. This was settled definitely when a contract was signed for the use of Madison Square Garden by the Automobile Board of Trade, which also has a lease on the new Grand Central Palace.

The combined shows will be held under the auspices of the Automobile Board of Trade, the exhibits being divided between

the new Grand Central Palace and Madison Square Garden.

According to present plans, the shows will be open to all makers of motor cars and accessories, but the plan of allotting space has not been definitely settled. It is not unlikely that a single ticket will admit to both buildings with arrangements for conveniently transporting visitors from one building to the other.

It was believed that Madison Square Garden would remain up for a year, but the announcement of the Board of Trade makes this a certainty. The Grand Central Palace people state that plans for their arena, which is to be built alongside the present Palace, are being perfected and that it will be ready for the 1914 automobile show.

The Show Committee of the Automobile Board of Trade which will have in charge the big double exhibition next winter are: Colonel George Pope, chairman; Charles Clifton, Alfred Reeves and Merle L. Downs.

### **FORD TO ESTABLISH ASSEMBLING PLANT IN MILWAUKEE**

Owing to inadequate freight facilities at Detroit, the Ford Motor Co. announces that it will establish an assembling branch at Milwaukee. The Courteen docks, in the south side, have been secured and preparations for building have already been started. The Ford Company will send several skilled men to superintend the assembling of the automobiles and eight cars loaded with seventy frames and parts have already been shipped to start the new plant.

The business of the New York branch, under the management of Gaston Plaintiff, has increased so rapidly that the huge five-storied service plant in Long Island City, built only a year ago, has become entirely inadequate to meet the needs of the rapidly growing number of Ford customers, and plans are under way to add six more stories to the building.

### **ELECTRIC VEHICLE MEN FORM CHICAGO BRANCH**

A Chicago branch of the Electric Vehicle Association of America was organized at a banquet in the Hotel Sherman, May 9, for the purpose of co-operating with the national organization in stimulating interest in the use of the electric motor vehicles. The officers chosen were: President, George H. Jones, of the Commonwealth Edison Company; vice-president, G. H. Atkins, of the Electric Storage Battery Company; secretary and treasurer, J. W. McDowell, of the General Vehicle Company; executive committee, the officers, C. A. Murphy and L. E. Burr, of the Woods Motor Company.

As the principal speaker, W. H. Blood, Jr., president of the national organization, told of the advantages in co-operation and urged the members to use legitimate means in furthering their business.

### **STUDEBAKER WAGONS USED**

Dr. B. D. Guilbert, of Tegucigalpa, Honduras, received a concession from the government of Honduras for the carrying of mails between San Lorenzo on the south coast of Tegucigalpa.

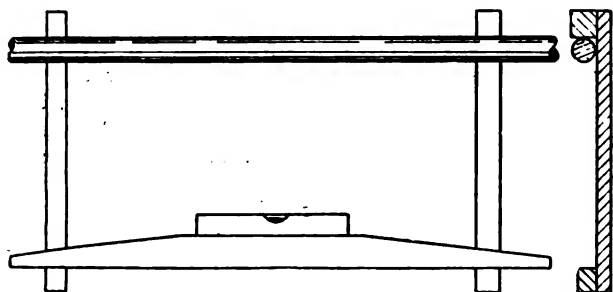
The arrangement is under a four year contract and the service will start on August 1. For this purpose two No. 141½ Studebaker mountain spring wagons have been purchased.

### **GRINNEL FACTORY EXPANDS**

The Spaulding Manufacturing Company, Grinnell, Ia., has added to its already extensive business of manufacturing buggies, carriages and automobiles that of the manufacture of motor trucks of light weight for street traffic.

## LEVELING SHAFTING

We recently leveled the shafting in the plant where I am employed, in a very short time, as follows: We made two hangers for a straightedge, then placed the level on straight-



Simple Method of Leveling Shafting

edge, as shown in drawing herewith. The hangers were made long enough so one man could work on the floor while another man worked on the shaft.—R. P. M., in *The Woodworker*.

## LANE QUILTS KALAMAZOO BUGGY COMPANY

After serving 30 years as president of the Michigan Buggy Company, Kalamazoo, Mich., M. Henry Lane has retired and in his place Frank B. Lay, who has been vice-president for the same length of time, has been elected.

The Michigan Buggy Company is one of the largest buggy factories in the country, its buildings covering several acres of land. Besides the buggy factory, the firm also conducts the Michigan Automobile Company, a concern which is now turning out about a dozen machines a day. The automobile factory will immediately be enlarged with a capacity sufficient for the production of over 5,000 machines next year.

## WATERPROOFING WAGON TOPS

Simple, cheap and highly recommended. It renders it impermeable to moisture without making it stiff and liable to break: Soft soap is dissolved in hot water and a solution of iron sulphate added. The sulphuric acid combines with the potash of the soap and the iron oxide is precipitated with the fatty acid as an insoluble iron soap. This is washed and dried, and mixed with linseed oil. The soap prevents the oil from getting hard and cracking and at the same time water has no effect on it.

## REDUCTION ON AUTOMOBILES IN SALVADOR

The report of the Minister of the Treasury and of Public Credit, in a review of the tariff changes during the year 1911, records a reduction in the "aforo" on automobiles from 10 centavos to 5 centavos per kilo. The duty, calculated on that figure, including surtaxes, amounts to about 5 cents per pound.

## BEST RUBBER CEMENT

Pack bottle tight full of rubber—raw rubber—and cover with bisulphate of carbon. When dissolved you will have a rubber cement that is unbeatable and very handy for shop repairs use.

## WILL LOCATE IN DETROIT

The Parrish Manufacturing Company, of Reading, Pa., it is reported will build an immense plant for the manufacture of automobile frames in Detroit.

## NOW LOCATED IN DETROIT

The Novelty Tufting Machine Co. and Tufting Machine Supply Co., of Chicago, have sent notices to the trade that on and after May 1 their general offices would be located at 268 Jefferson avenue, Detroit, Mich., where they will carry a full line of tufting presses, button holders, plaiters, clinch buttons, washers, areameters, etc., and operate a department for the manufacture of moulds of every description.

## WHAT GOES INTO RUBBER

When the rubber of commerce is ready for use it may have made acquaintance with a few of all of the following named chemicals. No wonder rubber seeks out devious ways its wonders to perform when it has been introduced to carbolic, muriatic and sulphuric acids, ammonia, asbestos, antimony, asphaltum, Burgundy pitch, chalk, balsams of Canada, storax and tolu, cadmium, chloride of calcium, coal tar, emery and corundum. Fuller's earth, glycerine, Copal, Kauri and Damar gums, lanolin, magnesia, mica, castor, cottonseed, linseed, palm, rapeseed oils, baryta, lead, plumbago, potash, pumice stone, caustic soda, sulphur, talc, Venice turpentine, mineral and vegetable wax.

## GRANT PATENT LITIGATION

Oredrs have been entered in the U. S. District Court to take further proof in the suits against the Republic Rubber Co. and the Goodrich Co. in the litigation based upon the Grant patent. The suits are for alleged infringement of the patent by the companies named and have been brought on behalf of the Consolidated Rubber Company. Last month similar suits against two constituent companies of the United States Tire Company were settled by taking out licenses to manufacture under the terms of the patent.



Auto "Four-in-hand" Coach,  
Made by Thrupp & Maberly, London

## INJUNCTION AGAINST MCKINNON CHAIN

Upon application of the Parsons Non-Skid Company, Ltd., the Weed Chain Tire Grip Company and Harry Weed, Judge Hazel in United States District Court at Buffalo, N. Y., on May 14, issued a temporary injunction restraining the McKinnon Chain Company, of Buffalo, from manufacturing and selling portions of the non-skid tire equipment. The application was made on the ground that the McKinnon Chain Company in the manufacture and sale of Cross chains infringed upon the patent held by the Wood corporations.

### **DENNISTON COMPANY FILES VOLUNTARY PETITION IN BANKRUPTCY**

The Denniston Company, manufacturers of commercial automobiles, tops and bodies for motor cars, and other accessories, at Buffalo, N. Y., filed May 13 a voluntary petition in bankruptcy with Clerk Petrie of the United States District Court. The company has liabilities to the amount of \$65,745.94 and assets totaling \$99,636.27. Judge Hazel in United States Court appointed Edward J. Barcale, of Buffalo, as receiver. Bond, which was furnished immediately, was placed at \$20,000. The receiver was directed to continue the business of the concern for a period not exceeding 30 days.

### **FRONTIER TIRE COMPANY ORGANIZED**

The Frontier Tire & Rubber Company, manufacturers of automobile tires and sundries, has just completed the organization of its mammoth plant at Buffalo, N. Y. The following officers have been elected: Orson E. Yeager, head of the Buffalo Chamber of Commerce and president of the Victor Motor Car Company, was chosen president; first vice-president, Frank V. E. Bardel; second vice-president, John W. Gibbs; treasurer, George T. Roberts; secretary, M. F. Dirnberger; general manager, John N. Gardner. New machinery has been installed in the plant at 1400-1414 Niagara street.

### **WILL BUILD BODY PLANT IN CANADA**

The National Auto Body Company, Ltd., recently incorporated in Canada with a capital stock of \$150,000, will put up a large plant near Windsor, Ont. The main building will be two stories high, of brick, and 55 x 300 feet. The company will begin operations with about 100 men, manufacturing wood, steel and aluminum bodies.

### **BODY COMPANY TO BUILD ADDITIONS**

The Racine Manufacturing Company, Racine, Wis., manufacturing automobile bodies and trimmings, has plans for two large additions to be built at once. The company is now one of the largest producers of bodies in the country and is capitalized at \$800,000.

### **DISCONTINUES MAKING 4-CYLINDER CARS**

The Lozier Motor Company, of Detroit, has discontinued the manufacture of four-cylinder cars and will devote its entire attention hereafter to the making of the six-cylinder type.

### **ECONOMY SPRING CO. BUILDING NEW PLANT**

The Economy Spring Company, Racine, Wis., has started work on the erection of a new plant on Wisconsin street. The company is only a few years old, but has had a remarkable growth and its present quarters are entirely inadequate.

### **BUYING MACHINERY**

The Bower Roller Bearing Company, Detroit, Mich., is purchasing \$50,000 worth of new machinery and equipment to take care of increased business.

### **NEW AUTO PLANT FOR INDIANAPOLIS**

A new automobile company was launched in Indianapolis on May 10 under the name of the Henderson Motor Car Company, with a paid up capital stock of \$100,000. The company will manufacture pleasure motor cars. L. Carter, of Jessup, Ga., is president.

### **MOTOR TRUCKS AND OMNIBUSES IN THE UNITED KINGDOM**

Nothing was more significant in 1911 than the increased use of motor industrial vehicles, says Consul Gen. John L. Griffiths, of London. It was estimated at the close of the year that about 14 per cent. of the business traffic on the streets of London was transported in motor vehicles. All the leading manufacturers have large orders for industrial or commercial motors. The demands are in excess of the supply, as the utility of such vehicles has now been thoroughly demonstrated and they are regarded as not only desirable but as indispensable in all branches of trade.

So successful has the motor omnibus been in London that in seven years about 5,000 horse-driven omnibuses and 18,000 horses have been retired through the introduction of 2,500 motor omnibuses by the various companies. It is estimated that double the number of omnibuses now in service could be profitably used over the existing routes in London and suburbs. It is stated that "one of the most remarkable innovations in motor omnibus within the past two years is the reduced cost of operation."

One of the great developments of the motor omnibus service, it is thought, will be in the direction of affording an opportunity to working men and women of going a considerable distance in the country on Sunday for a comparatively small expense. Very few railway trains are run in the United Kingdom on Sundays and this offers an additional inducement for the extension of the motor omnibus service.

A further, or at least a new, step in the development of the motor omnibus is the gasoline-electric car which is being introduced in London. The advantages claimed for it are, "smoothness and silence of running, increased power of acceleration, decreased cost of running, maintenance, and lubricants, and the durability of its system of transmitting the power from the gasoline engine to the driving wheels." The Great Western Railway Co. is now making experiments with a gasoline-electric coach which is an evidence of the competition that is now in progress between different power-producing systems for both rail and road traction.

According to the report of the Commissioners of Customs and Excise, there were 75,617 motor cars in the United Kingdom for the year ended March 31, 1911, on which license duties were collected.

### **MOTOR BUSES IN CANADA**

Consul Felix S. S. Johnson, of Kingston, writes that three double-deck motor buses, to cost \$10,000 each, will be started in North Rosedale, a suburb of Toronto, if the city council passes the recommendation made by the board of control, two of them for a 20-minute service, and the third for emergencies and rush hours. An English company talks of establishing a motor bus service in Toronto this summer, beginning with about 50 busses, with ultimately about 300 in commission.

### **WILL BUILD AUTOMOBILE BODIES**

Automobile bodies will be manufactured in Richmond, Va., by the Richmond Vehicle Construction Company, recently organized in that city.

### **MAINE COMPANY REORGANIZES**

A new \$50,000 automobile concern has been organized under the name of the Maine Motor Car Company to succeed the Maine Motor Carriage Company, at Portland Me. The Maine Motor Carriage Company will continue the garage and accessory department until November 1, after which date the new company will take over this portion of the business.

# Trade News From Near and Far

## BUSINESS CHANGES

A. J. Poe has purchased the stock of vehicles, etc., in Hooper, Neb., of George W. Heun.

Howard Moody has succeeded to the entire business of Moody Bros., in Perry, Ia.

C. R. Spangler has succeeded to the business of Spangler & Emmons, in Walnut, Ia.

S. D. Moody has purchased the vehicle business of C. C. Schmoker, in Osceola, Neb.

C. A. Gifford has disposed of his stock of vehicles, etc., in Farrar, Ia., to M. A. Porter.

Roberts Bros. have purchased the stock of buggies, etc., of Lee & Sons, in Coyle, Okla.

Louis Walter has sold out his buggy business in Grange, Tex., to Speckles & Zwiener.

Kocer & Berkheimer have purchased the vehicle business of J. C. Jordan, in Rushville, Neb.

C. J. Nickle has disposed of his stock of vehicles, etc., in Wales, N. D., to Doud & Hillman.

W. I. Harris has purchased the stock of buggies, etc., of W. H. Powers, in College View, Neb.

J. F. Coulter has disposed of his stock of vehicles, etc., in Billings, Okla., to Gensman Bros. & Co.

J. C. Dineen & Sons, Sioux City, Ia., manufacturers of carriages, have sold out to John Kinkist.

Cantrall & Wolever have purchased the stock of wagons, etc., of H. F. Pinney, in Fredonia, Kas.

Martin & Kane have disposed of their stock of carriages, etc., in Waterville, Minn., to Quiran & Zellner.

Elmer J. Brown has purchased the vehicle business of J. J. & W. F. Muenzenmeyer, in Woodbine, Kas.

Knube Nerem has purchased the stock of vehicles and implements of Schuck & Johnson, in Revere, Minn.

At Farmer City, Ill., Martin B. Maloney bought the Tronkle Implement Co. stock of implements and wagons.

J. J. Vinckle has purchased the buggy and implement business of his father, Peter Vinckle, in Randolph, Neb.

H. F. Brownfield has been succeeded in the vehicle and implement business in Madison, Neb., by Brownfield & Funkhouser.

## NEW FIRMS AND INCORPORATIONS

A. Blogg is about to engage in the vehicle business in Willow Lake, S. D.

J. E. Bullen is about to erect a carriage factory in Greenville, Tenn.

E. J. Sinn has engaged in the vehicle and implement business in Truro, Ia.

E. J. Peters has opened a new stock of vehicles, etc., in Prescott, Ia.

R. C. Caulk is about to engage in the vehicle business in Emerson, Neb.

John Ahl has succeeded to the Gorder vehicle business in Louisville, Neb.

W. J. Tooley is about to open a new stock of vehicles, etc., in Minden, Neb.

E. G. Coppock is just opening a new stock of buggies, etc., in Buffalo, Mont.

Oliver Mason is about to open a new stock of vehicles, etc., in Loup City, Neb.

Edwin Odegard has put in a new stock of vehicles, etc., in Glendorado, Minn.

John Bryngelson has opened a new stock of vehicles and implements in Galloway, Minn.

Miller & Rensch, hardware dealers of Freeport, Mich., are about to add a line of vehicles.

F. J. Bragg has established himself in the buggy and implement business in Cornell, Minn.

Schmidt Bros. have engaged in the vehicle and implement business in Valley Springs, S. D.

A. L. Anderson is about to engage in the vehicle and implement business in Lansford, N. D.

Hicks & Hackett are about to engage in the vehicle and implement business in Ionia, Mich.

Frank Kern, formerly of Great Bend, Kas., is engaging in the vehicle business in Dundee, Kas.

The Seabury-Carson Co. has been organized in Logan, Ia., to deal in vehicles, automobiles, etc.

P. E. Olmstead, of Hubbard City, Tex., contemplates establishing a carriage factory in Mexia, Tex.

Lane & Thurston have but recently engaged in the vehicle and implement business in Wewoka, Okla.

The Logan Carriage & Automobile Co. has been incorporated in Parkersburg, W. Va., with a capital of \$25,000.

The Richmond Vehicle Construction Co. has been incorporated in Richmond, Va., with a capital stock of \$15,000.

L. A. John, proprietor of the Ellinwood Auto Co., of Ellinwood, Kas., has made arrangements to add a line of vehicles and implements.

Kadix-Newark Motor Truck Co., East Orange, N. J., capital \$200,000, to manufacture motor trucks, has been incorporated by G. F. Kallberg and L. L. Dunn.

## FIRES

The stock of vehicles of Bostrom Bros., in Max, N. D., has been destroyed by fire.

Fire destroyed the property owned by the Henry Quellmalz Lumber & Manufacturing Company, manufacturers of wagons at St. Louis, Mo.

The Stroud wagon plant at Omaha, Neb., was destroyed by fire April 5, causing a loss of \$100,000. John Lausterer, a wood worker, was burned to death.

The Moon Bros. Carriage Company plant at St. Louis, Mo., was destroyed by fire on May 11. The fire was said to be due to crossed electric wires and defective insulation. The loss at the time of the fire was estimated to amount to \$60,000.

## IMPROVEMENTS AND EXTENSIONS

A new two story building is being erected by the Marinette (Wis.) Carriage Works, of which Andrew Heim is proprietor.

The Erby Carriage & Wagon Co., Chicago, Ill., has increased its capital from \$4,000 to \$35,000 and changed the name to Wm. Erby & Sons Co.

The Consolidated Wagon & Machine Co., of Salt Lake City, Utah, has erected a handsome new two-story retail salesroom at Downey, Iowa.

George Becker's handsome new buggy and implement repository, Sterling, Ill., is now completed. The building is built of brick, three stories high.

D. A. Brown & Son, Ashtabula, O., have erected a new building at 85 Park street and will move their business from the present location, 85 Center street, soon.

By an expenditure of \$10,000 the Wright Carriage Body Company, Moline, Ill., will add a third story to the east half of its



main building, making an expansion that will permit the hiring of fifty additional men. Inadequate facilities during the season ending have made it necessary to refuse many orders.

John C. Raum & Son are building a new warehouse and wagon factory at 405 South Sharp street, Baltimore, Md. The warehouse will be three stories high, the first story being 18 feet high, the other two 13 feet each. The first floor will be of concrete construction and will be fitted with high grade machinery for the making of wagons.

### REMOVAL NOTICE

The Defiance Machine Works, Defiance, Ohio, announces the removal of the London offices from 71 Queen street, E. C., to 60 Queen Victoria street, E. C.

### RUBBER IN ROTTERDAM

For over 50 years the Rotterdam rubber market has been established, and up to 1895 all the African product was brought to this market. The total imports of rubber into Rotterdam last year were 2,637,000 pounds, against 2,530,000 pounds for 1910 and 2,508,000 pounds for 1909. Of the total last year, 1,430,000 pounds were from Africa, 935,000 pounds from Java and Sumatra, 215,600 pounds from South America, and 57,200 pounds from Borneo. To the foregoing total might be added 1,876,600 pounds of jelutong and 1,683,000 pounds of Surinam leaf balata. The arrivals of rubber at Amsterdam were 519,200 pounds, of which 266,200 pounds were plantation output. Prices of rubber ruled downward during last year.

### HOOKE NOW GRAMM'S GENERAL MANAGER

Harvey S. Hooke has been appointed general manager for the Gramm Motor Truck Co., of Lima, Ohio, the appointment being made by John N. Willys, of the Willys-Overland Co., who recently acquired control and assumed the presidency of the Gramm Company. Hooke has been identified with the Willys interests as manager of the Marion Motor Car Co., of Indianapolis, which is one of Willys' properties. Hooke will be practically in full control of the Gramm plant, as the executive and sales offices will be retained in Lima and not removed to Toledo, as at first reported.

### WOMAN QUILTS JOB TO BECOME REAL BOSS

Mrs. James H. McCabe, who until April 10 was Mrs. Mary Hall, treasurer of the McCabe-Powers Carriage Company, of which her husband is president, has resigned her position as an employe to take up the active management of the McCabe household.

On that day Mrs. McCabe officially tendered her resignation to her husband and signed a life contract at Effingham, Ill., where she married her employer. For five years Mrs. Hall, 37 years old, and Mr. McCabe, 66, sat at opposite desks in the office of the carriage company on North Broadway attentive only to their duties.

Mr. McCabe's first wife was killed by an automobile three years ago. Mrs. Hall has been a widow for eight years.

### KELLY-SPRINGFIELDS

A very nice idea in the way of a cut-out folder, in line with the many good ideas in an advertising way issued by the Kelly-Springfield people, is the predicament of a party of motorists who had tire trouble because—turn over—they were not like these happy ones on the other side. Good idea to put about on counters for the curious to pick up and talk about. Can have the dealers' name on the folder if desired.

### CONVENTION OF NATIONAL HARDWOOD LUMBER ASSOCIATION

The National Hardwood Lumber Association will hold its annual meeting at the Sherman House in Chicago, Thursday and Friday, June 6 and 7.

Matters of great importance are to be brought up at this meeting, making it imperative that every hardwood lumber manufacturer attend. The social features will be well taken care of, as Chicago lumbermen claim they are going to outdo all previous records in the line of entertainment.

### SOUTHERN WAGON MAKERS MEET

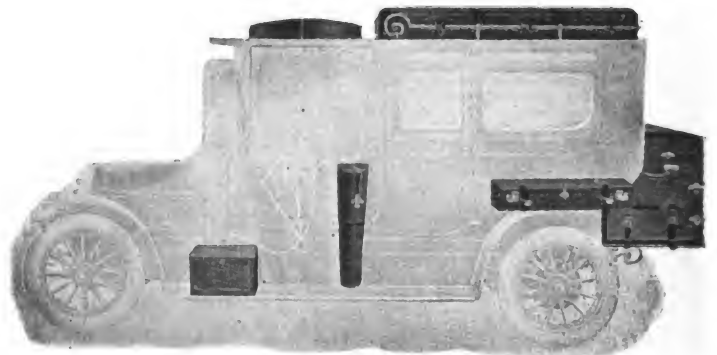
Delegates from several Southern States attended the quarterly meeting of the Wagon Makers' Association of the South, at Bristol, Va., April 10. W. H. Russell, of Clarksville, president of the association, presided. The session was devoted mainly to a discussion of transportation and trade conditions. The next meeting will be held in Lynchburg in July.

### TO OPERATE JASPER HUB FACTORY

Albert P. Fenn, of Tell City, Ind., and William Rice, of Louisville, have bought the hub works at Jasper, Ind., from Philip Knukel and Mrs. Martin Eckstein. The plant has been idle since the death of Mr. Eckstein several years ago. The new owners will manufacture hubs, bent woodworks, etc. Messrs. Fenn and Rice were interested in the Depauw, Ind., Hub Works, which was destroyed by fire recently. Rice, Fenn Hub Co. is the name of the new incorporation and the capital \$10,000.

### OHIOANS BUY SOUTHERN PLANT

The Excelsior Seat Co., Columbus, Ohio, has purchased the plant of the Harris-Glen Body Co., at Oxford, N. C., and will operate the branch to supply the southern trade. The company has also purchased four acres adjoining the plant and will enlarge the works. The selection of Oxford for this southern branch was largely determined by the fact that already the North Carolina city is one of the leading buggy manufacturing centers of the South. There are three buggy factories and a large wheel factory there, and this enlargement of the field will add facilities for greater growth along this line.



Disposal of Luggage Carried to Its Extreme

### CADILLAC TO ENLARGE

Cadillac Motor Car Co., Detroit, has enlarged its plant capacity by buying the Long Manufacturing Co. property on the west side of Cass avenue, between Burroughs and Amsterdam avenues, with 320 feet frontage on Cass and 145 feet along Burroughs and Amsterdam.

# Recently Granted Vehicle Patents

- 1,009,219—Clutch for automobile starting devices. James C. Boyle, Calgary, Alberta, Canada.
- 1,009,276—Starter for automobiles and the like. James C. Boyle, Calgary, Alberta, Canada.
- 1,009,642—Metallic wheel. Martin R. Bruner, Wapakoneta, Ohio.
- 1,009,470—Combined tail light and number for automobiles. David S. Cake, Los Angeles, Cal.
- 1,009,649—Lubricating device for wheels. Carl B. Chandler, assignor by mesne assignments, to Canton Foundry & Heating Co., Canton, Ill.
- 1,009,224—Automobile fender. William B. Cole, assignor of one-half to E. M. Warfuel, Chicago, Ill.
- 1,009,382—Automobile tire pump. George A. Collison, Burlington, Vt.
- 1,009,284—Automobile tire. Franklin M. Crispin, assignor of one-half to J. W. Hamer, Beverly, N. J.
- 1,009,051—Tire protector. George C. Cross, Chattanooga, Tenn.
- 1,009,052—Automobile heater. Otto Cullman, Chicago, Ill.
- 1,009,226—Vehicle wheel. Frederick W. Damitz, Pe Ell, Wash.
- 1,009,529—Vehicle brake. Alfred A. DeMars, Cleveland, Ohio.
- 1,009,287—Compressed air suspension for vehicles. Leon Delpeuch, Neilly-sur-Seine, France.
- 1,009,062—Wheel. Franklin A. Frommann, St. Louis, Mo.
- 1,009,503—Self starting device for internal combustion engines. Gavin C. Goodhart, Willows, Inkpen, England.
- 1,009,410—Automobile spring clamp. Owen T. Hawkins, Pomono, Cal.
- 1,009,668—Controller box. Carl Jass, Horicon, Wis.
- 1,009,711—Vehicle brake. Harry L. Heckley, Utica, Ohio.
- 1,009,154—Jointed wheel tread. Louis T. Knowles, Minneapolis, Minn.
- 1,009,529—Vehicle wheel rim. Edward H. Koken, Akron, Ohio.
- 1,009,423—Auxiliary rim for vehicle wheels. Alexander Latimer, London, England.
- 1,009,158—Automatic fender for automobiles. William A. Linquist, Minneapolis, Minn.
- 1,009,675—Speed controller for motor vehicles. Benjamin F. Lord, Jr., Milburn, N. J.
- 1,009,081—Vehicle brake. John A. McGrath, St. Louis, Mo.
- 1,009,088—Automobile wheel. Charles S. Myers, Columbia, Pa.
- 1,009,169—Spring wheel. Edwin G. Owen, Wysox, Pa.
- 1,009,336—Running gear for vehicles. Isaac E. Palmer, Middletown, Conn.
- 1,009,187—Automobile fender. George P. Schaurer, assignor of one-half to I. M. Heath, Chicago, Ill.
- 1,009,103—Demountable rim and tire. Robert P. Scott, Cadiz, Ohio.
- 1,009,347—Vehicle wheel rim. Edwin C. Shaw, assignor, by mesne assignments, to The United Rim Company, Akron, Ohio.
- 1,009,445—Vehicle wheel rim. Edwin C. Shaw, assignor, by mesne assignments, to The United Rim Company, Akron, Ohio.
- 1,009,591—Tire holder. Nils P. Sjolholm, St. Louis, Mo.
- 1,009,193—Gravity feed emergency device for motor vehicles. Edward C. Smith, San Diego, Cal.
- 1,009,364-5-6—Tire construction. Paul E. Wirt, Bloomsburg, Pa.
- 1,009,368—Antislipping and antiskidding attachment for tires. Chas. B. Woodworth, Niagara Falls, N. Y.
- 1,010,340—Headlight for automobiles. Lyman O. Amanson and M. H. Ulrich, Miller, S. D.
- 1,010,110—Vehicle top bowholder. Clarence L. Bair, San Francisco, Cal.
- 1,010,217—Axle coupling for vehicles. Charles A. Behlen, Franklin, Va.
- 1,010,223—Tool for removing vehicle wheels and nuts. Edward Bowen, Gillett, Wis.
- 1,010,014—Emergency tire for automobile wheels, etc. William Budesheim and J. D. Stinchcomb, Baltimore, Md.
- 1,009,720—Vehicle wheel. Jacques Bustanoby, New York, N. Y.
- 1,010,230—Tire for the wheels of automobiles and other vehicles. William Butterfield, Dublin, Ireland.
- 1,010,231—Automobile tire. Thomas Christopherson, East Helena, Mont.
- 1,010,031—Elastic hub wheel. Cesare Feroci, Rome, Italy.
- 1,009,966—Pneumatic tire. John W. Haase and E. H. Haase, Amherst, Neb.
- 1,010,137—Vehicle tire and rim. James E. Hale, assignor to the Goodyear Tire and Rubber Co., Akron, Ohio.
- 1,010,138—Vehicle frame. Jesse H. Hand, Ann Arbor, Mich.
- 1,010,258—Combined sectional tire and wheel rim. Frank M. Henry, New York, N. Y.
- 1,009,752—Manufacturing vehicle tires. John Huebner, Chicago, Ill.
- 1,009,841—Motor vehicle. Patrick L. Hussey, Cleveland, Ohio.
- 1,010,061—Puncture proof tire. William W. Lower, Tyrone, Pa.
- 1,009,765—Machine for manufacturing pneumatic tires. Alphonse Mathern, Berlin, Germany.
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- 1,009,854—Hub attaching device. James A. Peek, Springfield, Mo., assignor of one-half to T. A. Stone, North Manchester, Ind.
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- 1,009,931—Automobile lock. Walter G. Sachs and C. W. Landers, San Francisco, Cal.
- 1,009,999—Vehicle top. George H. Smith, Janesville, Wis., assignor of one-fourth to E. J. Smith, Chicago, Ill., and one-fourth to J. M. Connors, Janesville, Wis.
- 1,010,082—Steering and controlling mechanism for motor vehicles. Gustavus F. Smith, New Berlin, Ohio.
- 1,010,194—Wagon chute. John G. Smith, Philadelphia, Pa.
- 1,009,942—Automobile wheel. Clarence W. Tompkins, Brookfield, Mo.
- 1,010,715—Wind shield. Edward L. Akerman, assignor of one-half to C. E. Chamberlin, Detroit, Mich.
- 1,010,844—Automobile hood. Henry G. Baum, assignor of one-half to Pullman Motor Car Co., York, Pa.
- 1,011,013—Vehicle tire. Asplan Beldam, Baldock, England.
- 1,011,117—Steam generator for automobiles and the like. Arthur W. Caps and R. F. Miehle, Jr., said Caps assignor to A. M. Miehle, Chicago, Ill.
- 1,010,725—Vehicle movement detector. Clyde J. Coleman, assignor to C. Hubert, New York, N. Y.
- 1,011,121—Inflating device for automobile tires. Andrew C. Danver, Pittsburgh, Pa., assignor of one-half to W. Ely, Providence, R. I.
- 1,011,037—Draft attachment for carriages and wagons. George A. Darden, Dallas, Texas.
- 1,010,600—Front bolster axle for wagons. Samuel K. Dennis, Chicago, Ill., assignor to International Harvester Company.
- 1,010,484—Wheel. Roman von Fabrice, Brooklyn, N. Y.
- 1,010,883—Wheel brake. Samuel D. Forman, Tonopah, Nev.
- 1,010,884—Cross chain for antiskid devices. Floyd H. Fox, New York.
- 1,010,885—Antiskid chain. Floyd H. Fox, New York, N. Y.
- 1,010,894—Device for turning shoulders on wooden spokes. Albert D. Goodell, assignor to Goodell Tool Co., Shelburne Falls, Mass.
- 1,010,621—Detachable rim for wheels. John W. Hall and C. Baynes, London, England.
- 1,010,424—Machine for removing cleats from fellies. Clarence B. Hayes, Jackson, Mich.
- 1,010,775—Draft equalizer. John Langenfeld, Earlring, Iowa.
- 1,010,926—Wagon hitch. Edward C. Lawrence, Downes Grove, Ill.
- 1,010,661—Automobile buffer. Allan L. McGregor, Chicago, Ill.
- 1,010,941—Vehicle brake attachment. Canute H. Mickelson, Bench, Idaho.
- 1,010,786—Wheel. Edward J. Nelson, Alliance, and F. H. Lang, assignors of fifty-two hundredths to V. F. Hofman, Havelock, Neb.
- 1,010,803—Detachable wheel. Victor Riley, Hollybank, Coventry, England.
- 1,010,688—Spring wheel. John C. Rhinehart, Washington, D. C., assignor to the Rhinehart Resilient Wheel Co., Incorporated, Alexandria, Va.
- 1,010,457—Axle nut lock. William H. Shuter, Maywood, Ill.
- 1,010,968—Vehicle top fastener. William Spickernagle, Owensboro, Ky.
- 1,011,091—Resilient wheel. Johnson A. Suddarth, St. Joseph, Mo.
- 1,010,980—Vehicle tire. Ellsworth Tallman, Morley, Iowa.
- 1,011,096—Cranking device for explosion engines. William D. Townley, San Francisco, Cal., assignor to Hercules Auto Starter, Inc.
- 1,010,539—Wheel tire. Frank Vitale, Healdsburg, Cal.
- 1,010,560—Tire device. Dorah W. Wilt, University Place, Neb.
- 1,011,099—Sleigh knee. Arthur F. Winkler, Phillips, Wis.
- 1,011,140—Wheel puller for motor vehicles. James B. Allen and W. Bowler, San Diego, Cal.
- 1,011,311—Shock absorber for vehicles. Harry S. Bergen, Toledo, O.
- 1,011,155—Tire splicing mandrel. Chauncey C. Chamberlain, Ionia, Mich.
- 1,011,158—Bulb for automatic horns and the like. Albert Cleret, Paris, France.
- 1,011,325—Vehicle axle. John T. Davis and J. H. Allen, Argenta, Ark., said Allen assignor to said Davis.
- 1,011,450—Tire wrapping machine. Albert De Laski, Weehawken, and P. D. Thropp, assignors to the De Laski and Thropp Circular Woven Tire Co., Trenton, N. J.
- 1,011,332—Vehicle wheel. Burt E. Dohner, and A. J. Huff, Dayton, O.
- 1,011,591—Driving and steering mechanism for motor vehicles. William H. Douglas, Belleville, N. J., assignor to Healey & Co., New York, N. Y.
- 1,011,171—Spring wheel. Carl E. Dunham, Maddock, N. D.
- 1,011,174—Driving mechanism for motor vehicles. John Eckhard, Boston, Mass.
- 1,011,334—Wheel. Martin A. Ewald, Nicolet, Minn.
- 1,011,431—Motor driven vehicle. John B. Heverling, St. Louis, Mo.
- 1,011,345—Tire clamp for vehicle wheels. Frank M., J. S. and W. W. Hilton, Akron, Ohio.
- 1,011,305—Pneumatic tire. John G. A. Kitchen, Lancaster, and I. H. Storey, Ambleside, England.
- 1,011,351—Wheel. George X. Leffler, Talala, Okla.
- 1,011,353—Automobile tire pump. Otto W. Lindstrom, Hoopeston, Ill.
- 1,011,469—Vehicle wheel. Gabriel Mazzeo and P. Iarussi, Newark, N. J.
- 1,011,471—Pneumatic tire. William A. McCool, Beaver Falls, Pa., assignor to Hercules Tire & Rubber Co.
- 1,011,638—Spring wheel. William Morris, Cleveland, O.
- 1,011,894—Tire. William H. Reed, Hartford, Conn., assignor to Revere Rubber Co., Providence, R. I.
- 1,011,873—Fender for self propelled vehicles. Giovanni Sparno, New Britain, Conn.
- 1,011,277—Antiskidding device. Joseph Toren, Thornton, Ill.
- 1,011,679—Resilient wheel. John Vollman, assignor of one-third to P. DeVogel, Racine, Wis.
- 1,011,892—Wind guard for vehicles. Martin L. Williams, South Bend, Ind.
- 1,012,186—Wheel tire. Jacob B. Bean, Punxsutawney, Pa.
- 1,012,239—Wind shield. Theodore F. Bourne, Montclair, N. J.
- 1,012,325—Tire protector. John O. Caldwell, Jr., assignor of one-half to J. O. Caldwell, Sr., Boston, Mass.
- 1,012,247—Spare tire cover. Hyman Cohen, New York, N. Y.
- 1,012,331—Vehicle tire. William J. Cunningham, Philadelphia, Pa.
- 1,012,127—Shock absorber. Thomas G. Cushman, Sunland, Cal.
- 1,011,940—Rain and wind shield for automobiles. Anna K. Gilson, Quechee, Vt.
- 1,012,352—Folding top of vehicles. Traugott Golde, Gera, Germany.
- 1,012,353—Tire protector. Joseph C. Hammer, Chicago, Ill.
- 1,012,551—Draw bar for wagons. Pliny E. Holt, Stockton, Cal.
- 1,012,367—Detachable wheel rim. Karl Kindscherf, assignor to Continental Caoutchouc & Gutta Percha Compagnie, Hanover, Germany.
- 1,012,562—Steering gear for automobiles. Charles B. King, assignor of one-half to O. J. Mulford, Detroit, Mich.
- 1,011,901—Pneumatic tire. John G. A. Kitchen, Lancaster, and I. H. Storey, Ambleside, England.
- 1,012,374—Spring wheel. Emil M. Larson, Canby, Minn.
- 1,012,375—Tire. Frederick H. Lathrop, Chicago, Ill.
- 1,011,987—Wheel. Irving D. and F. A. Minor, Aurelia, Iowa.
- 1,012,098—Tire inflater. Enoch Rector, New York, N. Y.
- 1,012,159—Protection and antiskidding armor for pneumatic tires. Christopher Reichel, Amsterdam, N. Y.

1,012,459—Vehicle tire. Albert L. Siegrist, Akron, Ohio.  
1,012,033—Spring wheel. Paulus F. Van Keep, Breda, assignor to  
Amsterdamsche Maatschappij tot Exploitatie van Uitvindigen, Amsterdam, Netherlands.

#### DESIGNS

41,994—Tire tread. William T. Dorgen, Saginaw, Mich.  
41,949—Motor vehicle body. Winthrop D. Allen, Washington, D. C.  
Copies of above patents may be obtained for 15 cents by addressing  
John A. Saul, Solicitor Patents, Fendal Bldg., Washington, D. C.

### RECENTLY EXPIRED PATENTS OF INTEREST TO THE VEHICLE INDUSTRY

#### Patents Expired April 9, 1912

537,071—Thill Coupling. Horace D. Russell, Winslow, Ill.  
537,099—Cement injector for repairing pneumatic tires. Ernest W. Young, Chicago, Ill.  
537,180—Thill coupling. Fred E. Boss, New York, N. Y.  
537,229—Coach Hinge. Frank P. Ffleghar, New Haven, Conn.  
537,345—Wheel for vehicles. Calvin J. Holman, Chicago, Ill.

#### Patents Expired April 16, 1912

537,506—Pneumatic tire. George Van Wageman, New York, N. Y.  
537,536—Pneumatic tire. Hippolyte J. La Force, Toronto, Canada.  
537,537—Pneumatic tire. William Y. Lambert, Sheffield, England.  
537,628—Wagon. Melvill B. Boudinot, Vincennes, Ind.  
537,654—Valve for pneumatic tires. George H. Tansley, Hartford, Conn.  
537,779—Hub for vehicles. Martin L. Killan, Malone, N. Y.  
537,794—Supplemental tire. Effinger E. Whipple, St. Johns, Mich.

#### Patents Expired April 30, 1912

538,316—Carriage step. Thomas Beecher, New Haven, Conn.  
538,361—Tire and felly clamp. George Willing, Broken Bow, Neb.  
538,435—Wagon. August C. Sommer and William F. Sommer, Buffalo, N. Y.  
538,460—Thill coupling. Charles King, Grand Rapids, assignor to Michael McCarthy, Centralia, Wis.

#### Patents Expired May 7, 1912

538,689—Elastic tire for wheels. Anatol Metzger, Moscow, Russia.  
538,711—Wheel. William X. Stevens, Washington, D. C.  
538,734—Vehicle wheel. Godfried Laube, Huron, S. D.  
538,753—Seat lock for vehicles. Henry C. Swan, Oshkosh, Wis.  
538,763—Motor vehicle. Andrew W. J. Best, Key West, Fla.  
538,842—Carriage. James A. McLean, Amesbury, Mass.  
538,843—Road cart. Dideon J. Overshiner, San Diego, Cal.  
538,865—Motor truck. John A. Brill and Walter S. Adams, Brooklyn, N. Y.  
538,922—Whiffletree plate. John M. Lane, Ovid, Mich.  
538,930—Wagon brake. John A. Pajlmann, New Texas, Pa.  
The above lists of patents, trade marks and designs of interest to our patrons are furnished by Davis & Davis, solicitors of American and foreign patents, Washington, D. C., and St. Paul Building, New York City.

## OBITUARY

**Charles Abresch**, president and treasurer of the Charles Abresch Company, manufacturers of wagons, automobiles and trucks, died at his home in Milwaukee, Wis., April 27, after a lingering illness. He was born on May 12, 1850, at Dierdorf, province of Rhine, Germany, and came to this country in 1868, locating in Milwaukee. Two years later he started a small wagon works of his own, and through steady and persistent work he built up one of the largest plants of its kind in this country. In 1894 the company was capitalized for \$220,000, and now more than 800 persons are employed. The manufacture of automobiles and trucks was taken up five years ago. Eight years ago the entire factory was destroyed by fire, but was rebuilt at once on a much larger scale. The active pallbearers at the funeral consisted of employees of the Abresch Company who had been in the service for over twenty years.

**Henry Siefried**, 77, well known carriage and wagon builder of Youngstown, Ohio, died April 23 of hardening of the arteries and complications of the heart. He was the founder of the Youngstown Carriage & Wagon Company, which was in business for so many years in that city. One year after he had disposed of his interests in this company, in 1889, he formed a partnership with Owen D. Morgan for the manufacture of all kinds of vehicles. Five years later he retired from the management, although during much of the intervening time he had been with the Boardman street carriage works in various advisory capacities and also as manager of the firm's accounts.

**Charles H. Schwarz**, aged 78, a well known carriage builder, died April 29, at his home in Astoria, New York City. Mr. Schwarz was born in Germany and came to New York in 1852. He commenced business in Astoria in 1860 and prospered. His patrons included members of the Astor and Vanderbilt families and other prominent New Yorkers. Although he was entitled to be known as the Count von Schwarz, he never used his title in this country.

**David Kerr**, a pioneer carriage and wagon manufacturer of San Francisco, died April 9. Mr. Kerr, who was a native of Ireland, went to California by way of Panama in 1856, and soon after his entering the employ of Henry Casebolt the firm of Casebolt & Kerr was established. Subsequently this concern constructed the cars for the first railroad in California—the line between Sacramento and Folsom. The firm also built the first street cars for San Francisco. Kerr later went into business for himself, and retired after a busy and successful career.

**George A. Coon**, one of the oldest residents of Trenton, Tenn., and for a number of years a prosperous carriage and buggy builder, died of heart failure on April 19.

## Wants

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**Wanted**—Second-hand hair picker. Buser Poston Tufting Machine Co., Chillicothe, Ohio.

#### PATENTS.

**Patents**—H. W. T. Jenner, patent attorney and mechanical expert, 608 F St., Washington, D. C. Established 1883. I make a free examination and report if a patent can be had and exactly what it will cost. Send for circular.

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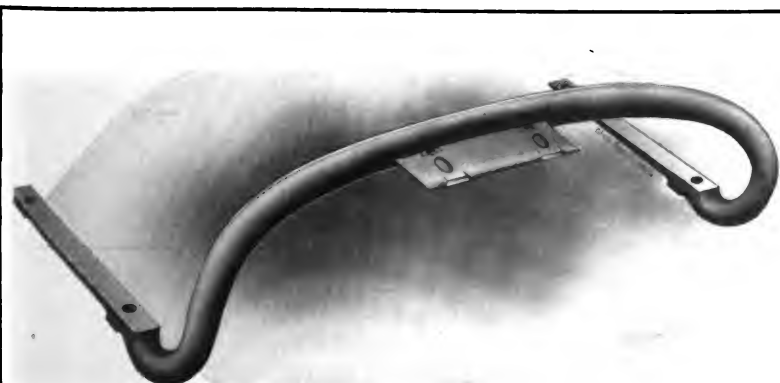
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of the compen-  
satory  
award  
reaches the in-  
jured workman?

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system does  
most  
for indus-  
trial efficiency?

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subject to  
accident—  
male or fe-  
male workers?

Why are New  
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How can  
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How can our  
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over  
1,000,000  
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| Chapter VII. Cost of Accident Compensation Insurance in Germany in Comparison with similar rates in the United States.   | Chapter XIII. Primal Defects of the British Legislation.   |
|  | Chapter XIV. Finding and Recommendations of the Committee.   |

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Ochsner, A., & Sons Co., New Haven, Conn.

## PASTE

Buckeye Paste Co., Columbus, O.  
Indianapolis (Ind.) Paste Co.

## RIMS

United Rim Co., Akron, O.

## RUBBER TIRES

**Autos, Pneumatics, Etc.**  
Consolidated Rubber Tire Co., N. Y. City  
Racine Auto Tire Co., Racine, Wis.  
**Carriages, Solid, Etc.**  
Kelly-Springfield Co., New York City.

## SEATS

Keystone Sheet Metal Co., Columbus, O.  
Miller, A. J., & Co., Bellefontaine, O.  
Ohio Seat Co., Cincinnati, O.

## SHAFT COUPLINGS

Eccles Co., Richard, Auburn, N. Y.

## SHAFT STRAPS

Decker, J. C., Montgomery, Pa.

## SPRINGS (Cushion)

National Spring & Wire Co., Jackson, Mich.

## SPRINGS, GEARS, ETC.

Frost Gear & Machine Co., Jackson, Mich.  
Lewis Spring & Axle Co., Jackson, Mich.  
Perfection Spring Co., Cleveland, O.

## THREADS

Meyer & Co., John C., Lowell, Mass.

## TRIMMING MATERIAL

Rubber Drills, Enameled Goods, Imitation  
Leather, Etc.

Fabrikoid Works, Newburg, N. Y.  
Fairfield Rubber Co., Fairfield, Conn.  
Landers Bros. Co., Toledo, O.  
Schlegel Mfg. Co., Rochester, N. Y.  
Standard Oil Cloth Co., New York City.

## TOPS

Buffalo T. & T. Co., Buffalo, N. Y.

## VARNISHES, PAINTS AND JAPANS

Devoe, F. W., and Reynolds, C. T., N. Y. C.  
Keystone Paint & Filler Co., Muncie, Pa.  
Masury, J. W., & Son, New York and Chicago  
Murphy Varnish Co., Newark, N. J.

## WHEELS AND WHEEL STOCK

Baltimore Hub & Wheel Co., Baltimore, Md.  
Crane & MacMahon, New York City.  
Gifford, John A., & Son, New York City.  
Hoopes Bros. & Darlington, West Chester, Pa.  
Jones, Phineas, & Co., Newark, N. J.  
New Wapakoneta Wheel Co., Terre Haute,  
Ind.  
Shortsville Wheel Co., Shortsville, N. Y.  
Standard Wheel Co., Terre Haute, Ind.  
Stinson, Edw. W., & Co., Baltimore, Md.

## WOOD STOCK, BENT WOOD, Etc.

Buckeye Handle, Gear & Bending Co., Al-  
lance, O.  
Crane & MacMahon, New York City.  
Delphos Hoop Co., (Bows) Delphos, O.  
Gifford, John A., & Son, New York City.  
Millikan, G. W., Muncie, Ind.

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SPECIALTIES

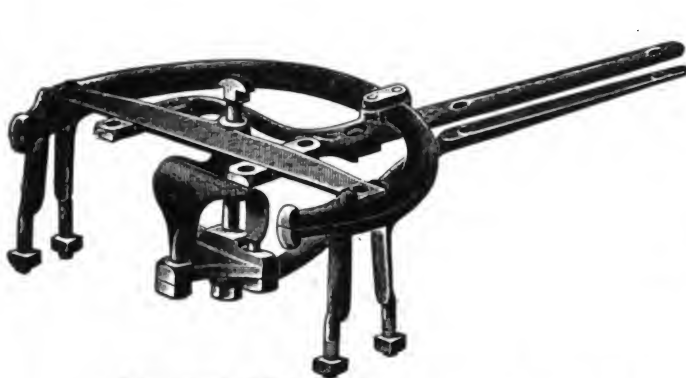
**C. T. RAYNOLDS & CO'S**

COACH COLORS  
VARNISHES  
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SPECIALTIES

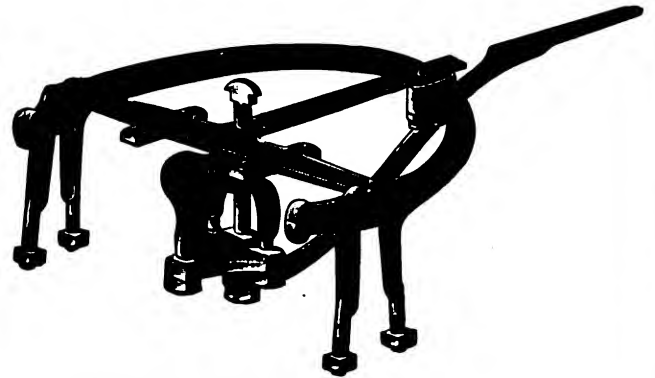
**FOR PAINTERS, ARTISTS AND DECORATORS**

All the brands and specialties of F. W. Devoe & Co. and C. T. Reynolds & Co. will be maintained separately as heretofore.

# HEADQUARTERS FOR SPECIAL FINE GEAR IRONS [Dropped Forged] CARRIAGE HARDWARE



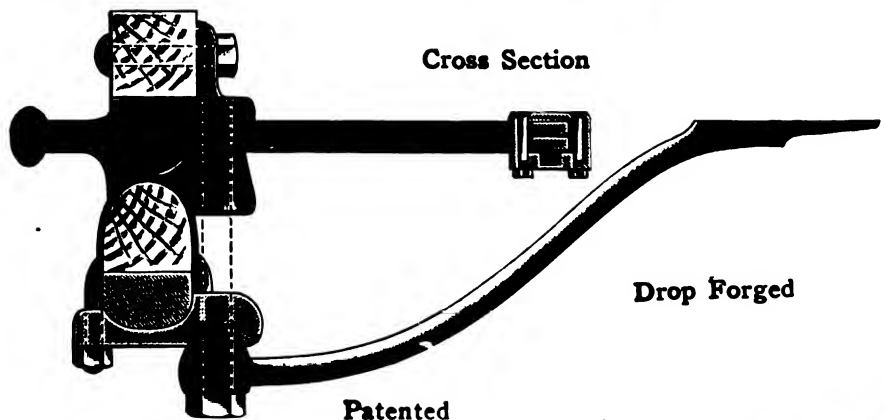
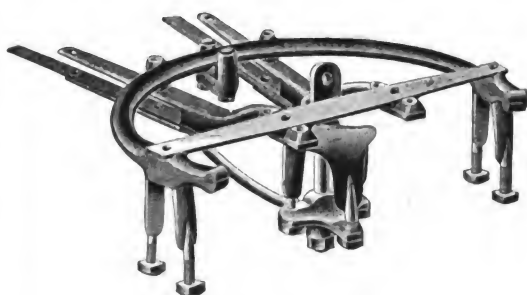
No. 1908—Gear Iron



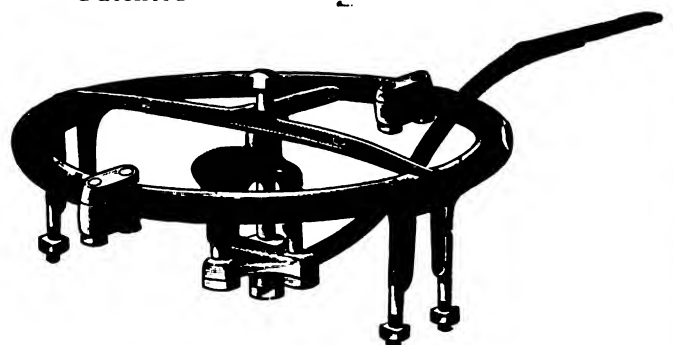
No. 2000—Gear Iron

## WILCOX'S Mechanical 3 Prong King Bolt

Double Locked in Head Block  
Plate and King Bolt Yoke. No  
Strain on Bolt. No Turn on  
Nut. Guaranteed.

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No. 1905—Gear Iron



No. 1909—Concord.

Forget your trouble and decide at once to use WILCOX DROP  
FORGED IRONS. Write us for pleasure

**The D. Wilcox Mfg. Co. Mechanicsburg Pa.**




**A. J. MILLER & CO.**  
BELLEFONTAINE, OHIO  
Makers of  
**VEHICLE**  
**BODIES and SEATS**

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Manufacturers of  
**Forgings: Carriage, Wagon, Automobile' Special**  
Send for Catalogue No. 17.

**PORTER'S BOLT CLIPPERS**  
"Easy" "New Easy" Allen-Randall



To Cut 5-16, 3-8, 1-2, 5-8, 3-4 Inch.  
**H. K. PORTER, EVERETT, MASS.**

**High Grade Motor Truck**  
**SPRINGS**



**THE PERFECTION SPRING CO.**  
Cleveland, Ohio.

**KEYSTONE BLACK FILLER**  
MAKES A PERFECT  
**ROUGHSTUFF**  
For Automobile Bodies and Parts  
It fills the pores of Metal and Wood perfectly. Sandpapers easily and produces a fine, smooth surface that DOES NOT CRACK, SCALE NOR PEEL.  
**POMEROY & FISCHER, New York**  
Selling Agents to Vehicle Trade  
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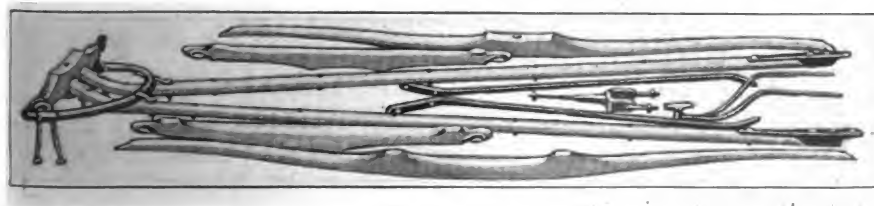
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If you only realized the inestimable value of roller bearing fifth wheels on trucks, vans, delivery wagons and all other medium and heavy vehicles, no job would leave your shop without  
**Roller Bearing Fifth Wheels**  
**WHY?** The adjustment is perfect. No oil or grease required. Almost indestructible. Will outwear any vehicle. Saves horseflesh and prolongs life of vehicle. Ask your jobber for the celebrated  
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Let us send you Catalogue and Price List.  
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The Most Complete Set on the Market. Write for Catalogue and Prices

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THAT'S what you want, friend DEALER, and that's good news involved in the handling of

## THE RACINE AUTO TIRE

We'll tell you why!

BECAUSE, your customer will not be worried by seeking to avoid the many sharp things that puncture other tires, for they won't puncture THE RACINE as it takes a pressure of over 4,000 pounds to puncture the chrome tanned leather outside jacket.

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HERCULES  
Hydraulic  
Cold Tire Setter



Sent on trial;  
fully guaranteed.

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**Hub Banders  
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Successor to National Machine Co., of Keokuk, Iowa



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BECAUSE, those cup-like studs that you see in our illustration will grip the ground just where, and just when, the ground needs gripping; so that he is free from the danger of skidding and slipping.

BECAUSE, his tire EXPENSE account will show a difference such as will cause him to talk enthusiastically to others about you and the RACINE AUTO TIRE.

All this counts for good business; so get busy. The RACINE AUTO TIRE is going into the hands of live, pushing dealers. We shall make it equally advantageous to them as to us. Be amongst the live ones. Take our proposition. Do it now; and together let us do it thoroughly.

## RACINE AUTO TIRE COMPANY

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## STANDARDIZATION OF RIMS MEANS

Convenience for the Auto Owner

An Unrestricted Market for the Tire Maker

Easier sales for the Auto Manufacturer

Any type of tire, whether straight, side or clincher, fits a **STANDARD UNIVERSAL RIM**

Write for free literature concerning the rim which two turns unlocks for demounting and two turns locks in place

### STANDARD UNIVERSAL RIMS

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## The WEST Hydraulic Tire Setter WILL CUT DOWN EXPENSE

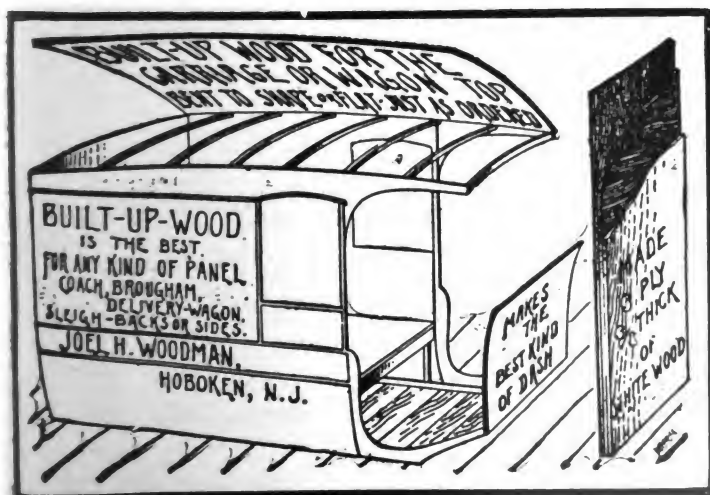


Tires set cold in one minute. This machine saves time—does the work better and quicker, does away with burned streaks. Only necessary to measure one wheel in a lot. Does not char the rim, and thus make the tire loosen prematurely.

Saves resandpapering of wheels. This machine is now increasing the profits of many manufacturers. Send for catalog and read about it.

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150 Rooms, 50 With Bath  
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\$2.50 per Day and Up.

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Cafe, Restaurant and Buffet in Connection  
Prices Moderate.



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still represent the highest standard of excellence and quality. True to our motto our line wins the approval of all vehicle builders. What can we do for you?  
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For applying Rubber Tires  
Send for Samples.  
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**GUARANTEED VERMIN PROOF**  
Get our prices on our No. 38 before  
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Hammered Work a Specialty  
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Fourteen years the standard  
OUR LATEST PRODUCT  
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A Sure-Sticking Dry product that WILL NOT FREEZE.  
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Locks, Hinges, Fix-  
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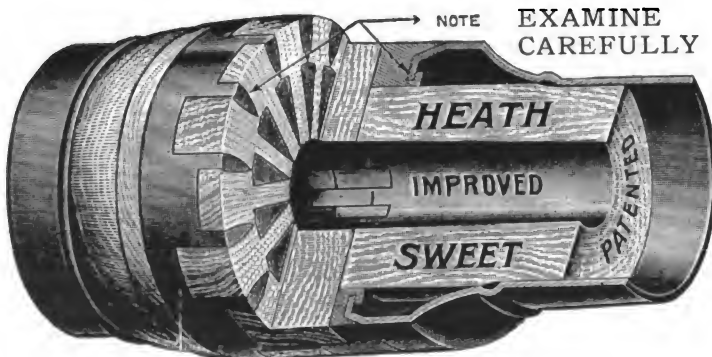
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Carriages and Automobiles are RIGHT.  
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**You Won't Find a Flaw**

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**Shortsville, New York**

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# The Road Proof - Varnish

The mud filled with ammonia, the road oil, the "sand blast" have always soon destroyed any varnish ever put on a car until this year.

There is now a remedy.

## VANADIUM CHASSIS FINISHING

withstands all these deadly enemies of varnish.

It also defies soapy water, the varnish destroyer in the garage. It is the only varnish that does.

The hoods, fenders and all underparts of the car retain their fresh, handsome appearance five to ten times as long when finished with this varnish as with any other ever made.

**Mr. Car Owner:** Request that Vanadium Chassis Finishing be used on your car. It will stay new looking for many months longer.

**Mr. Auto Painter:** Use Vanadium Chassis Finishing—every car finished with it will send some other car to your shop.

**Mr. Car Manufacturer:** There is no other one small item of extra cost that will do so much to make your car popular as will a permanent finish with Vanadium Chassis Finishing.

One quart of Vanadium Chassis Finishing costing \$1.25 is enough for a medium sized car. It will outwear \$5.00 worth of any other varnish—not to mention the extra cost of doing the job three or four times with anything else.

*Send \$1.25 for a trial new finish for a car*

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# McKINNON DASH COMPANY

BUFFALO, N. Y.

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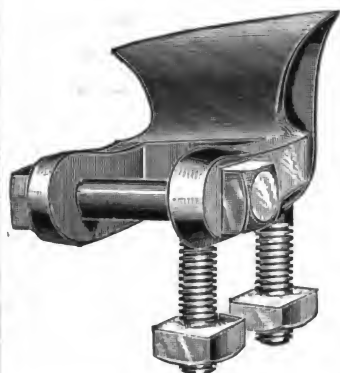
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## ARE YOU IN LINE

With the Leaders for 1912?

## THEY WILL USE DASH RAILS

Welded Solid To The Dash Frame



## Skewed Shaft Couplings

Regular or Oval Patterns  
For High Arched Axles

Furnished in rights and lefts for any height of arch. Oval Axle  
Clips  $\frac{5}{8}$  or  $\frac{3}{4}$  width to match Oval Couplings. Bolts, Clips,  
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Catalogue "H" and Prices on Application.

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## All Steel Piano Box Buggy Bodies One Piece Steel Seats

No More  
Checks,  
Splits,  
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Write for our illus-  
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other seats.

Furnished to most any width desired.

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Factory, Economy, Pa.

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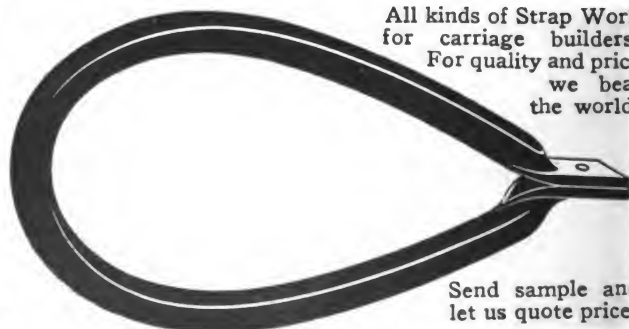
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## AUTOMOBILE, CARRIAGE and HARNESS SPECIALTIES

All kinds of Strap Work  
for carriage builders.  
For quality and price  
we beat  
the world.



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HEAVY and LIGHT  
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WAGONS and

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Originators of

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A Timken Bearing with cup Removed.

As the parts are all tapered, any wear can be wholly taken up by adjustment—by advancing the cone into this cup.



Cage that Holds Rollers in Place on Cone

Two ribs on the cone are absolutely necessary to maintain the full line contact, by keeping the rollers from twisting.



Timken "Long Series" Roller

Tapered rollers, revolving about a cone, sustain more load because they carry it along lines—not on points as balls do.



The Hardened Steel Cup

It requires six operations and six annealings to make this one-piece cage out of flat sheet-steel.



Cone, showing the Two Ribs

This roller receives as great care, accuracy, and fine workmanship as any part of a watch.

## The Inside Reason for the Efficiency of Timken Roller Bearing Axles

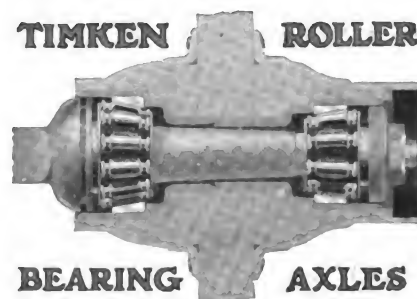
IT'S the Timken Tapered Roller Bearing—the same bearing that is used in the wheels of automobiles made by the great majority of motor-car builders.

The bearing that experience proves right in theory and best in the hard service of the motor car and motor truck.

The bearing that first made its success in horse drawn vehicles and still holds its prestige there.

The Timken Roller Bearing has four unique cardinal principles:

1. It has greater ability to sustain load because the load is distributed over the length of rollers, not concentrated on points as with ball bearings.
2. It has greater ability to meet end thrust when the wagon rounds a corner, jars and sways over cobble stones, jolts into ruts.
3. Because the load is distributed over the length of rollers wear is reduced to the lowest possible point; and
4. It's the one perfectly adjustable bearing. When the wear inevitable in any bearing does come, it can, in the Timken, be entirely taken up by adjustment without sacrificing any of its original principles of efficiency. Simply by advancing the cone a little farther into the cup.



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New York Branch, 68th and Broadway. Chicago Branch, 1347 S. Michigan Ave. Timken Roller Bearings are used in a big majority of all motor cars. Pleasure and Commercial Car Axles and Jackshafts with Timken Roller Bearings are made only by the Timken-Detroit Axle Co., Detroit.

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We manufacture Vehicle Wheels of All Kinds; Light and Heavy. Sarven, Warner, Compressed Band and Wood Hub. Send for our Price List.

## THE NEW WAPAKONETA WHEEL COMPANY WAPAKONETA, OHIO

Please mention "The Hub" when you write.

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We have Automobile  
Gears for every purpose  
in stock upon which  
we can save you money.

**FROST GEAR & MACHINE COMPANY**  
JACKSON, MICHIGAN

**The Herbrand Company**  
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MANUFACTURERS OF  
HIGH GRADE

CARRIAGE AND AUTOMOBILE  
**FORGINGS**

**AND DROP FORGED WRENCHES**

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A PRODUCT FOR EVERY PURPOSE, PRODUCING DISTINCTIVE RESULTS

*S-W METAL PRIMERS S-W BODY AND GEAR UNDERCOATINGS*

*S-W Q. D. COLORS S-W COLOR VARNISHES*

*S-W FINISHING VARNISHES*

EFFICIENT IN QUALITY AND UNIFORMITY

*The SHERWIN-WILLIAMS Co.*

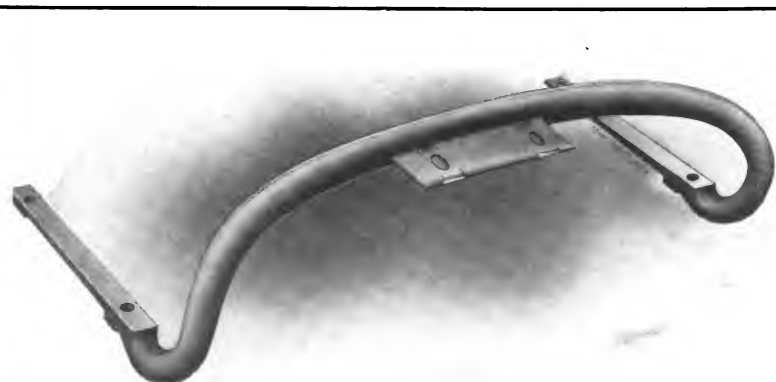
CLEVELAND

CHICAGO

NEWARK

MONTREAL

LONDON, ENG.



Patented December 7, 1897

### **Bailey Body Hanger**

BUGGY and SURREY SIZE

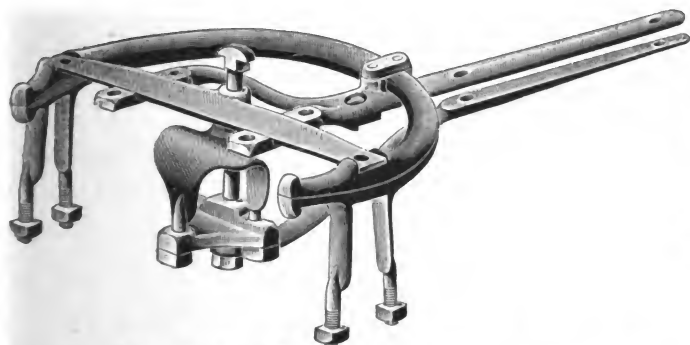
QUICK SHIPMENTS

WRITE FOR PRICES

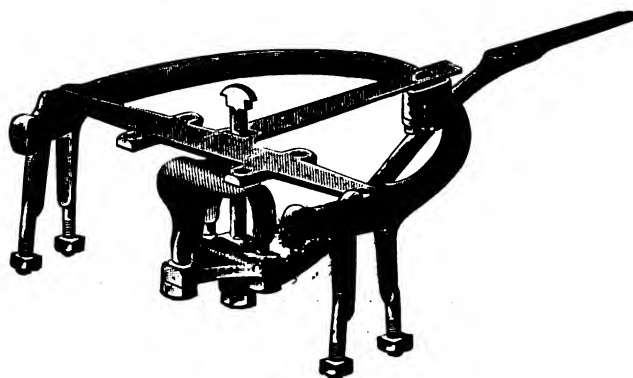
**The Keystone Forging Co.**

Northumberland, Pa.

# HEADQUARTERS FOR SPECIAL FINE GEAR IRONS [Dropped Forged] CARRIAGE HARDWARE



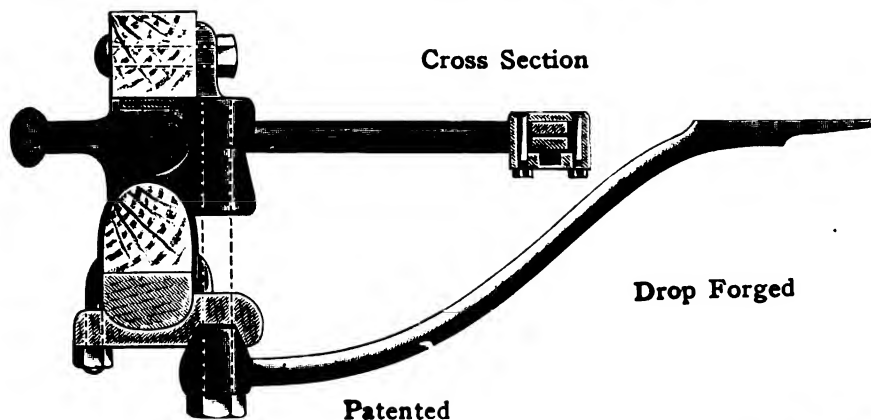
No. 1908—Gear Iron



No. 2000—Gear Iron

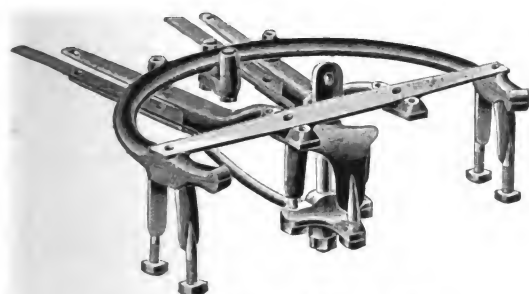
## WILCOX'S Mechanical 3 Prong King Bolt

Double Locked in Head Block  
Plate and King Bolt Yoke. No  
Strain on Bolt. No Turn on  
Nut. Guaranteed.

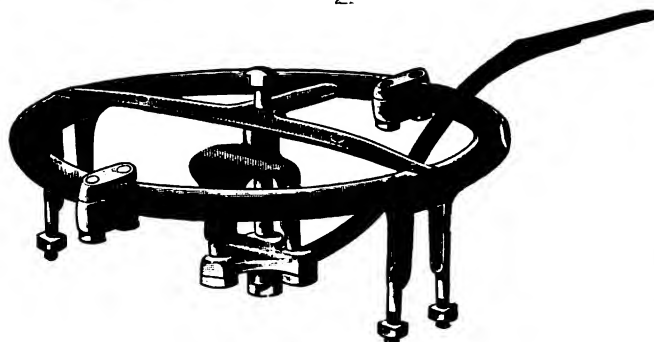


Patented

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No. 1905—Gear Iron



No. 1909—Concord.

Forget your trouble and decide at once to use WILCOX DROP  
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**The D. Wilcox Mfg. Co. Mechanicsburg Pa.**

# Buckram, Webbing,

Made in Our Factory

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Top Material,  
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Sheeting,  
Bow Lining,  
Cushion Canvas,

**Landers Brothers Co.,**  
TOLEDO, OHIO.

Prompt Shipments

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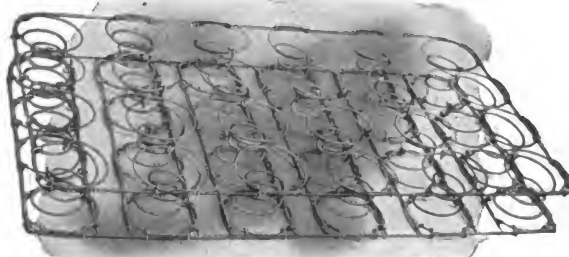
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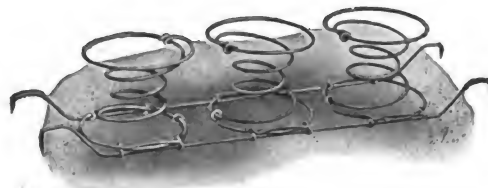
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**SPRING or SOFT EDGE CUSHION FRAME**  
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We will send sample hide for your approval without charge.

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# METAL BODY MACHINERY

of PETTINGELL PATENTS forms the largest, if not the entire equipment of most every automobile body plant in the United States. This surely denotes superiority of the Pettingell line. These machines are also extensively used to do first class work in getting out body stock and frame work.

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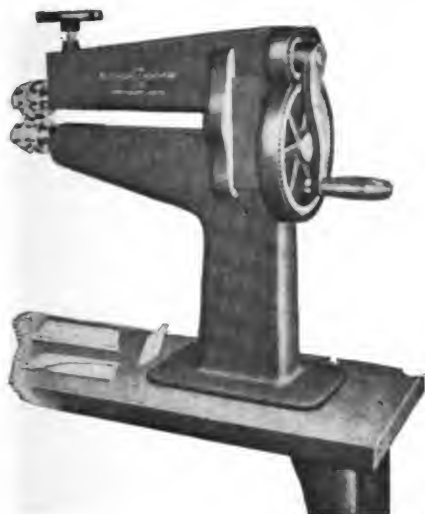
**NEW AUTOMATIC POWER HAMMER**

Designed and made especially for Aluminum or Metal Body Work; gives plenty of room to form or turn body panels, seats, wide backs, etc. Is designed and built to run at a high rate of speed, and the peculiar construction with springs and belts preserves the bearings, pins and screws from racking or breaking.



**IMPROVED METAL ROLLER FORMER.**

A solid, substantial machine, all metal, with cut gears. Will make any curve or various irregular curves on Mud Guards, Metal Panels, Seats, Etc.



**HAND MOULDING OR BEADING FORMER.**

Will form moulding or beading any size or shape, cuts all metals, will fold in wire around edge of metal and turn over flanges, etc. Intended for use in factories and shops where small machines are needed for much of the work that can be done quicker and easier than on large power machines, and also for many shops where they have not power or facilities or do not wish to put in the large, powerful and more expensive machines.



**POWER MOULDING OR BEADING FORMER**

A big improvement over any machines formerly used for forming, beading or moulding; cutting all metals; turning over flanges or folding in wired edge of metal, or any part of the work, and combines three machines in one. Adjustable every way and quickly changed for any work. Designed and built to handle all kinds of metal, aluminum, sheet steel, copper or tin.

**THE PETTINGELL MACHINE CO.**  
**AMESBURY, - - - - - MASSACHUSETTS**



**Quality  
Is  
Economy**

*Some of The Sayings  
of Painters concerning  
Murphy Quick Rubbing*

"It is far and away the Easiest to put on."

"It Flows and Spreads Itself to do a Painter's heart good."

"Under ordinary conditions, it is ready to rub in 36 to 40 hours without sweating."

"By a large majority, it takes least time and least labor to rub."

"The nibs rub off perfectly smooth - never pull out or mash in - if it is dry."

"It makes an ideal surface for the Finishing varnish."

"Equaled by no other Rubbing Varnish in the world."

"It may honestly be called *The Non-Troublesome Rubbing.*"

"Never heard it criticised."

Thanks, Gentlemen - neither have we.

Especially thanks to those who have added:

"Murphy Finishings and Coach Colors are equally fine."

The Varnish

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Longest

**Murphy Varnish Company**

FRANKLIN MURPHY, President.

Associated with Dougall Varnish Co., Ltd., Montreal, Canada

NEWARK,  
N. J.

CHICAGO,  
ILL.

# The Hub

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JUNE, 1912

No. 3

## THE TRADE NEWS PUBLISHING CO. OF N. Y. Publishers of THE HUB

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### FOREIGN REPRESENTATIVES:

FRANCE.—L. Dupont, publisher of *Le Guide des Carrossiers*, 78 Rue Boissière, Paris. Subscription price, 15 francs, postpaid.

GERMANY.—Gustave Miesen, Bohn & Rh. Subscription price, 12 marks, postpaid.

ENGLAND.—Thomas Mattison, "Floriana," Hillside Avenue, Bitterne Park, Southampton. Subscription price, 12 shillings, postpaid.

## A Recrudescence.

It has become noticeable enough to be significant that the vogue of the horse-drawn vehicle is again coming into play in the cities.

It was uncommon, it must be allowed, to see such "establishments" on the roads of recent years, but the well set-up coachman and the well-appointed carriage drawn by well selected horses, covered with well fitting harness, is not an infrequent sight now, by any means.

This is most gratifying, and it is not said to the disparagement of the street locomotive and car. Both kinds of vehicles have suitable uses to which people of discriminating taste will adapt themselves.

Let the automobile be tinkered never so much, it yet remains a machine pure and simple, and will find its place where machines are needed for journeys of length and duration of which horses are not capable.

But the town carriage, well-appointed, has not been approached as a vehicle of elegance and polite necessity. It is the only vehicle that enables a woman of fashion to exploit herself, her clothes and her social status in convincing fashion. She must be realizing that such is the fact because she is seen being trundled about in such "turnouts"—a sight formerly very rare.

From the merely trade point of view we are not sure

this is an unmixed advantage. Those builders who followed the trend and built automobiles for automobilia were agreeably shocked to find that the selfsame customers who used to haggle, exchange and hang up as to payments, were as docile as well trained servants when it came to an auto car transaction. They stood the gaff of much higher prices, and put their cash down on the nail without a protest or excuse. It was most gratifying to the carriage builder to become auto builder.

Perhaps when the fad turns to a mere fancy and then becomes a mere transaction in the purchase of a new vehicle, matters will become normal, speaking from the point of human nature, and the old conditions will supervene. We hope not, because cash for vehicles is a very pleasant way to conduct commerce for the vehicle builder.

## Trying it on Himself.

The motor car body builder should be himself a veteran automobile tourist. We know of one builder who is, probably there are others.

There is no way so effective to study conditions that ought to be met, no way to so effectually find out the weak spots in design, let them appear in body or chassis. There is a lot of theorizing about how the passenger will feel when he bumps the bumps at speed, and arrangements are made accordingly. Sometimes they are good, and again they are far from good.

In the days of the horse-drawn vehicle the doctor, the all around practitioner, was a great assistance to the builder. He was a hard driver, he liked his ease, and the habits of close observation compelled by the practice of his profession, enabled him to point out and discuss demerits in a way that carried understanding.

The man of pills may be useful again when it is a matter of pointing out body improvements in automobiles, but the builder should be on the job himself.

We believe the builder of the chassis is very rigid in his tryouts. He keeps a staff of hard drivers, who put the machine to its trumps and then report what they have noticed that will bear improvement, but we have not heard that bodies are tried out in the same way as a rule. It is important that they should be.

We have seen it stated so often that the seats for the passengers have been made so luxurious, such feather bed affairs. So much stuffing, so many deep coil upholstering springs. Almost a bed and much more than a seat.

We understand this is done to take up the shock of the jolt. Why should not the suspension be looked to

for the accomplishment of such work? That used to be the way it was done by those who knew how to hang up a body on a gear.

We notice the practice is now to check the too violent spring action in both directions by a lot of tackle that looks like an attempt at mooring a ship. There are enough shock absorbers, leather check straps, and rubber buffers to make the springs look like very ineffective contrivances for intended uses.

Another noticeable fact is the amount of noise that develops in cars after a term of hard service. Everything about them seems to rattle. Enough noise is generated to make an old-time vehicle builder lose his reputation, but it seems to be endured now as something to be expected after a certain amount of hard usage. If it is really a necessary outcome of the kind of vehicle, then it is a pretty poor affair for passenger service. The taxicab is the most pronounced example of something giving out the sound of immediate disintegration of parts, and a menace to safety. The type or "model" seems to make no difference. They all arrive at the same noisy end.

If the so-called cheap cars deteriorate as rapidly, we think there will have to be some ultimate radical improvements in construction along the line of simplification and reduction of parts.

But we are yet in the hurrah period of the industry, a time when the patient swallows the pill because the doctor says it will do him good. A lot is taken on faith that one of these days the builder will have to demonstrate and prove or "money back."

## Get Rid of the Flies.

The painter, especially when he is varnishing, looks on the fly as not the least of his troubles. He screens his windows and takes the usual precautions, among them being the sticky paper which is such a nuisance.

There is now a kind of national campaign on with the view of exterminating our common summer pest, the house fly. The latest is to place about a room shallow basins partly filled with water, mixed into which is a third its bulk of formaldehyde. This is said to be a sure shot. It is easy, cleanly, and worth trying in the paint shop.

## Getting Down to Hardpan.

Mr. Clement Studebaker, Jr., through his advertising agent, has been interviewed to order and has much to say from which we extract a very small part and here print:

"The automobile business," said Mr. Studebaker, "can't be run in the future as it has in the past. The automobile is no longer an experiment, a novelty or a toy. It is an immensely important mechanical feature of our natural life. The wild cat times are over. Mushroom growths are at an end. The rush into automobile manufacture, the craze for flash and novelty, the systems of making and selling, the reckless disregard of after

service in a car, will not be tolerated by the car users of the future—and careful manufacturers have got to think about the future."

It is most gratifying to this journal to see the outcropping of the second, or rational state of the automobile industry. The Hub maintained just this and bore down hard on the subject, when the mole journalists were chanting the chorus popular at the time, having no idea of the trend of conditions, or no courage to express themselves for fear of financial shrinkages, we must infer.

However, perhaps they were right in not being too far ahead of the procession. Now that they have the keynote they will all sing in tune.

## Founders of Technical School.

In article on Technical School in May Hub a grave omission is noted. The credit of founding the school should have been definitely ascribed to the late John W. Britton, the famous head of the house of Brewster & Co., in co-operation with the late George W. W. Houghton, editor of The Hub. Mr. Houghton was the enthusiast of the idea, Mr. Britton was the idea made manifest, and the late Mr. Lawson Valentine was the generous contributor, fired by Mr. Houghton's enthusiasm, that gave the "sinews of war" that made the idea take on concrete shape so that success was possible in the beginning.

## U. S. RUBBER CO.'S BIG EARNINGS

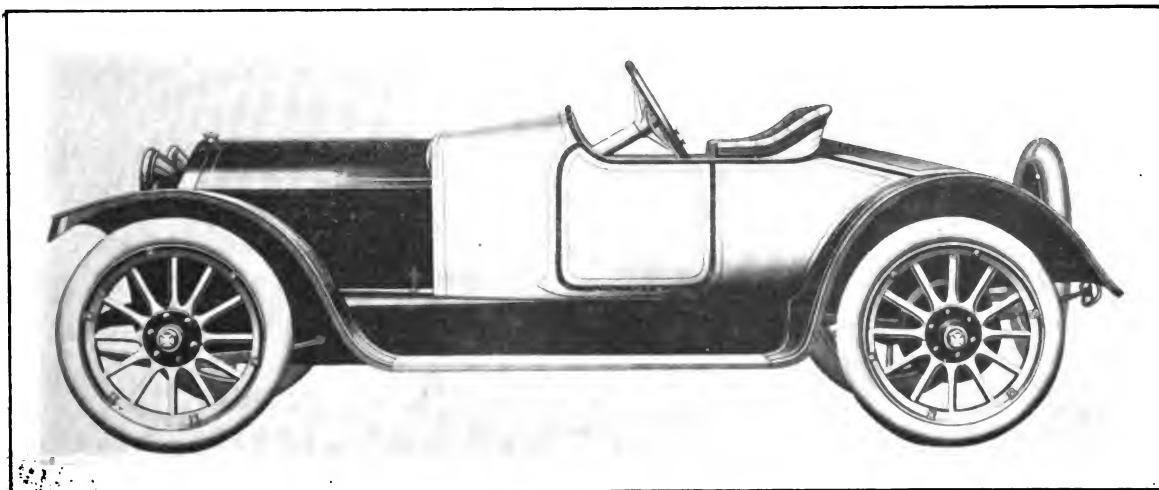
Samuel P. Colt, president of the United States Rubber Co.—which owns the United States Tire Co.—in a communication to the stockholders has made public the greatness of its earnings and the surplus which it has on hand, and justifying the proposed increase of its capital from \$50,000,000 to \$120,000,000, as follows:

"For the last fiscal year, after payment of all interest charges," he says, "the entire net earnings of the United States Rubber Co. and of its subsidiaries to (the extent of the company's interest therein) were \$6,711,331. The amount paid for dividends during the last year, including three quarterly dividends on the common stock, was \$4,550,000, which, had four quarterly dividends been paid on the common stock would have been increased to \$4,800,000. This sum, therefore, was almost \$2,000,000 less than the company's earnings.

"On April 1, 1912, the surplus of the United States Rubber Co. and its direct subsidiaries was \$9,175,729, and on January 1, 1912, the further surplus of the Rubber Goods Manufacturing Co. (of which the United States Rubber Co. owned substantially all of the common stock and more than three-quarters of the preferred) was \$8,260,877. Accordingly, upon the basis of last year's earnings, and disregarding the expectation of increased business and earnings, there would appear to be adequate assurance of earnings to provide full dividends after the issue of new stock; and upon the basis of surplus it appears that there is ample justification for a dividend upon the common stock so long as the same shall not constitute a drain upon the cash resources of the company.

"It is to be observed that the common stockholders are entitled to consideration in view of the fact that the greater part of these surpluses have been accumulated during the years in which dividends have been suspended on their stock. These considerations indicate the propriety not only of the issue of such common stock by way of dividend, but also of the fairness of offering it to the holders of the common stock, who under the charter are entitled to all dividends payable out of surplus after payment of full dividends upon the two preferred stocks."

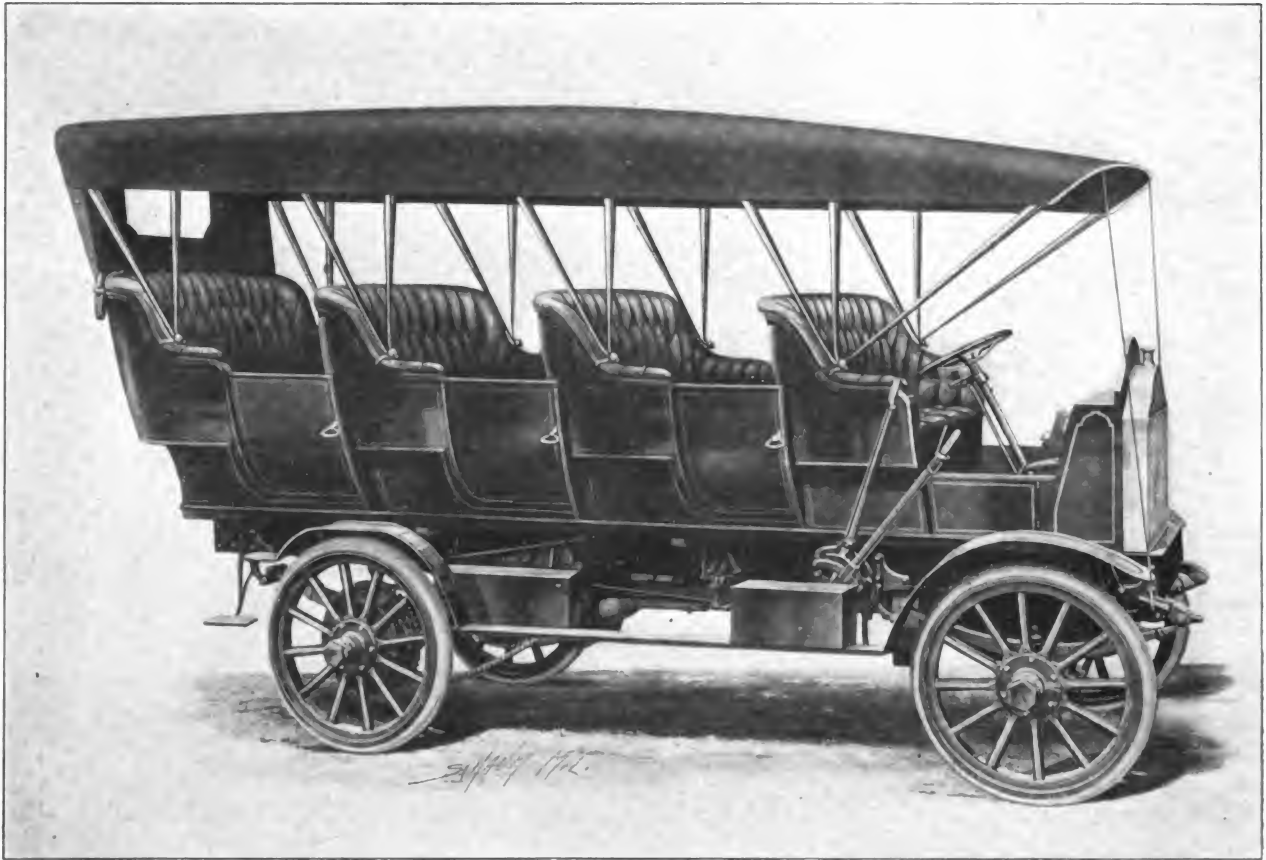
## VEHICLE FASHIONS FOR JUNE, 1912



**A CLEVER HENDERSON DESIGN**  
Henderson Motor Car Co.



**FUNERAL CAR THAT IS A FUNERAL TRAIN**  
L. Glesenkamp Sons & Co.

**SIGHT SEEING AUTOMOBILE**

Description next month

**THE NEW 1913 IRVIN COUPE-LANDAULET**

See description on page 82

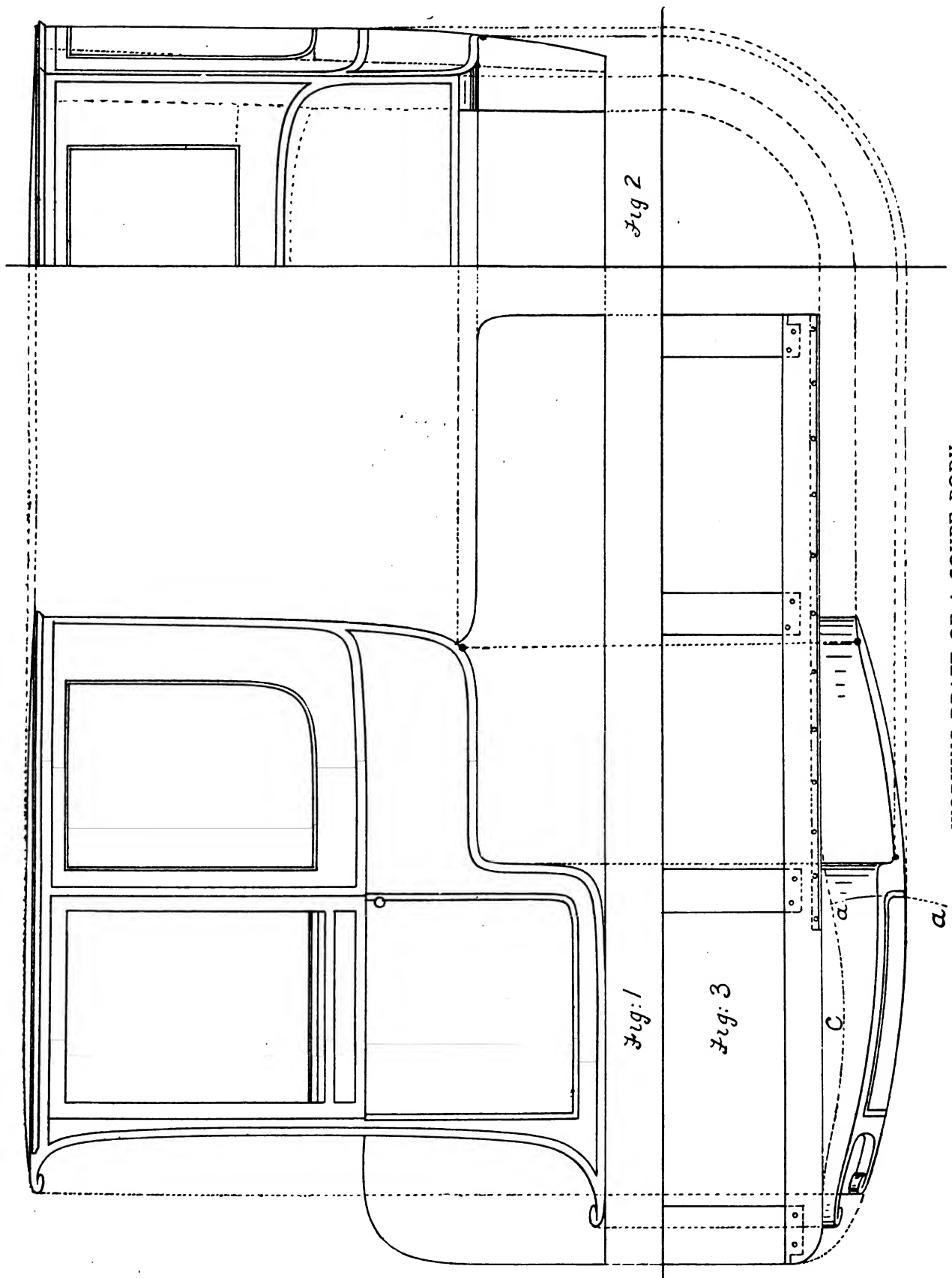




**SAMPSON ARMY FIELD WAGON**  
United States Motor Co.



**THE PRIZE TEAM AND WAGON IN NEW YORK WORK HORSE PARADE**



WORKING DRAFT OF A COUPE BODY  
Described on opposite page

# Wood-working Shop.

## WORKING DRAWING OF A COUPE BODY

(Illustration on preceding page)

The light car is now beginning to make itself felt amongst those who desire motoring without the heavy expense which cars of large calibre entail.

The gasoline and tire bill of large cars runs into figures of magnitude when a year's touring has to be accounted and settled for.

The light car provides for all the touring pleasures obtainable in a heavy one, while the expense is very considerably reduced. A car, heavy in itself, is not necessarily one from which the highest efficiency is obtainable. Some of these consume a gallon per ten miles and drive heavily on a hill climb, whereas a light car gives a greater mileage to the gallon of gasoline consumed, while a quicker movement in taking country of varying surfaces and gradients is obtained.

The working draft herewith is of a body that is suitable to an engined chassis that will give the results spoken of above. The light car, suitably designed and clothed in the art and dignity that a true carriage is invested with, would be sure of an appreciative reception amongst a section of those who desire to get every utility and pleasure out of motoring without the excessive expenditure attaching to heavy horsepowered vehicles.

The working drawing of coupe body which we give here possesses all the attractiveness in design that the light car should be garbed in. The lines are in strict harmony with the horse drawn coupe, and therefore has all the aristocratic bearing of the single brougham. The body is designed in the top hind quarters to have moldings all around to harmonize with the bottom quarters. These are worked up in the solid and the panels grooved in. The side light is made spacious, which lightens up the interior of the body as well as cuts up the heaviness of the quarter.

The molding on the shutting pillar is worked up in the solid. The quarter panel round the light can be put in one piece and fitted into the jigger grooves of the elbow and corner pillar. The top rail of the lights is framed to the shutting pillar and the corner pillar, and also screwed up to the cant rail, but kept back to the boxing line of the corner panel which is jointed to it.

This method of building makes a very clean job and does away with putting metal beading round the elbows and back cross rail, while the perfect molding symmetry of the body is a complete formation throughout.

The standing pillar, which is also the shutting pillar, is framed into the bottomsides on the top and secured with bolt and nut through its center upwards. The front or chariot pillar are done in the same way and the moldings forced up in the solid.

The quarter bottomsides are framed into the standing pillar, and half check framed or slip tenon framed to the corner pillar. The body should be nicely edge plated along the edge of the bottom side and up the pillars connecting the quarter bottom side and the standing pillar. The lines of the bottom body are on those of a Barker brougham, a style that is very popular throughout motor body construction and designing.

Fig. 1 shows the elevation of design body and accessory boot behind.

Fig. 2 shows the half back sectional plan and the lines of the moldings, which are all worked up in the solid, partitioning the panelling complete. The cross rail and corner pillar are

got out of sufficient widths to make a strong framing as the chain line explains.

Fig. 3 shows the half plan and the construction lines. The boot is framed into a square line, the body bottom side and the boot bottom side being in one but cut out in shape to the design of the body. The bottom side is half check framed to the boot and screwed to it from underneath. The turn under line of the quarter, the door line, and the bottom line of the body, together with the cross widths of the body, are all clearly shown and the constructional points stated and determined by chain lines.

The line a-a gives the shut line of the door and the bevel at which the door pillar and the standing pillar should be dressed up to; the boot side is got out of stuff solid sided which tends to stiffen the body.

The projection of the body over the chassis on the door line is  $5\frac{3}{4}$  inches; a heavy projection is always a source of weakness in the suspension of motors. The chassis should be curved to take as direct a bearing on the main framing as is possible, and to this end the sides are curved on the door line of the bottom side to meet this hanging necessity as is shown on the line c.

This plan helps the chassis to maintain itself and the body to a greater rigidity and so keep the framing from working and the doors from jamming.

The roof boards are dressed off level with the cant rail and back and front top rails of the body and covered with leather, the tacking being covered with cornice piece moldings right around.

The sizes for building are: Length of body on chassis, 9 ft. 8 in.; width of hind top quarter, 30 in., at elbow point,  $29\frac{1}{2}$  in.; depth of quarter on door line over moldings and cornice, 36 in.; size of side light,  $27 \times 20\frac{1}{2}$  in.; width of door, 24 in.; depth of bottom panel of door,  $23\frac{1}{2}$  in.; depth of bottom side over molding to door bottom,  $2\frac{3}{4}$  in.; depth of bottom body quarter from elbow over bottom side molding, 12 in.; width of standing pillar from door lapping plate over molding, 3 in.—a  $\frac{1}{2}$  in. has to be added to this for checks; width of bottom of chariot pillar,  $11\frac{1}{2}$  in. over eye—a  $\frac{1}{2}$  in. has to be added to this for checks; depth from quarter bottom side to chassis line, 14 in.

Length of hind boot from star point at corner pillar of body, 3 ft.; depth of side, 14 in.; width of body at back, 42 in.; width across standing pillars, 53 in.; across front pillars, 48 in.; on seat line, 44 in.; from seat line to cant rail, 45 in.

Width of body on chassis on the hind boot, 35 in.; size of back light,  $26 \times 19$  in.

## DRY LUMBER

How many people, though they have been in the wood-working business for some time, can tell even approximately how dry wood is, by inspection? Of course, when you cut into a lot of 2-inch oak, it may be easily possible to tell whether all the sap is out of it or not, but even then, to say how dry it is takes a mighty artful guesser nine times out of ten. Ordinary wood that has been well kiln-dried and allowed to come to equilibrium with the air, will show from 3 to 8 per cent. moisture, and even as high as 12 per cent. under some special conditions. It is a matter of judgment that means something in a financial way to be able to tell when the kiln is ready to empty, so as not to spend money drying dry lumber, or, on the other hand, to empty the kiln of some partially dry stock.

One of the ways of doing this is to cut out a section of a board, and by observing the appearance of the cut and general condition of the sawdust, and perhaps the smell or taste of

the wood, arrive at some conclusion as to its condition as to moisture. While this method may answer in the hands of some people, through long experience with it, and may give better results than no method at all, I should like to advocate a simple method that will give reliable results every time, and will show accurately the condition of the wood when the car is tested to see if it is ready to come out of the kiln.

The only thing required is a pair of small scales, accurate to  $\frac{1}{4}$  ounce, and a warm place, at the temperature of boiling water. Cut several disks or sections from various pieces and weigh them accurately, keeping on a regular ruled form all weights, in order to prevent confusion. Then place these weighed disks over the boiler or on a steam coil where they will be kept at the temperature of boiling water for at least ten hours, then weigh again. The loss in weight will show as moisture, and, with ordinary care, is quite accurate. To calculate as percentage of water of the wood as tested, divide the loss in weight by the first weight taken. In carefully-dried woods this determination should show 3 to 5 per cent. water, and the car is then taken out and allowed to come to equilibrium with the outside air, which will take two or three days. With birch, gum or other wood which shows a tendency to twist and curl, the pile should be well weighted on the top layers until it has come into equilibrium with the humidity of the air, says S. P. Eiler in *Woodworker*.

Simply stated, all that is done is to take an accurate weight of a sample of the kiln-dried stock, dry it for a day and weigh it again. Divide the loss in weight by the original weight, and this should show from three to five, certainly not over five, for thoroughly dried stock.

## BEST MATERIALS AND METHODS FOR WHEELS —THE TIMBER First Article

To intelligently understand and apply the mechanic arts or sciences requires a thorough knowledge of the materials used in all their detail, such as the source of supply, difference of qualities and varieties, mode of preparation to become suitable for manipulation, and natural enemies to the material both before and after being wrought into the more perfect form.

We begin with a description of the geographical distribution of the timber best adapted by nature for the wheel maker's art.

As the hub is the foundation of the wheel, so we will make it the foundation of this article and describe the timber most suitable for its manufacture.

The majority of manufacturers prefer either rock elm (*ulmus Americana*) or sour gum (*nyssa multiflora*) as these two seem to possess every requirement for the purpose.

Rock elm spreads as far south as North Carolina, while it extends northward into the Canadas, westward as far as Illinois, and scattered somewhat beyond this point, being found on the Pacific coast, in Oregon.

Covering this wide range it varies with each locality, the best quality being confined to a limited region, New York and the more eastern states having the most suitable soil and climate for its perfection, while a fine variety is grown on the rough, rocky soil of some portions of Pennsylvania.

Ohio and Indiana produce the most in quantity; the timber, however, is not so heavy after drying, but is of fair quality, while the south and southwestern states produce timber which becomes quite light when thoroughly dried.

The rock elm does not carry its virtues very far upward in its growth, five feet being about all that can be taken from each tree.

In selecting this timber standing young trees that grow in the open spaces, where the elements have had full chance to render the growth tough and elastic, are preferable.

December and January seem to be the best months for felling the trees as vegetation is at rest in elm at this season. To prepare the timber for seasoning it should have the outer bark removed, leaving the "liber" or inner bark, except at the ends

of the sticks or logs, where the rough bark should be left on, to prevent the ends checking, which would ensue if this were removed.

The timber should not be allowed to remain on the ground, as the seeds of decay will manifest themselves in a very short time if so exposed. After remaining in the sticks in cross piles at least two months, the elm may then be cut into lengths for further curing, the ends of the blocks being first dipped into a cement composed of lard and rosin, which being elastic, shrinks with the wood, keeping the air from drying and cracking the ends, also preventing the gluten contained in the pores from being decomposed by the action of the atmosphere.

Dried in this manner without steaming, which is the practice of some manufacturers, elm will be found durable and very suitable for its purpose, but possessing the following defects: Owing to its rapid growth the concentric growth rings are quite far apart, the intermediate spaces are more or less cellular, which allows the temperature to affect the outer layers to such an extent that if the patterns used are not carefully designed, shelling of the surface occurs. The hub is also hard to keep covered with paint and varnish from the same cause. But the worst feature is the conveying of the grease used to lubricate the axle, which is conducted through the straight pores directly to the mortises, soon loosening the spokes by the destruction of the retaining fibres and glue.

These defects are more or less present in all qualities, but especially in the softer varieties, or where the block has been steamed, therefore, in selecting this fine timber it is important to remember that there is but one kind or quality fit for good work, viz., the very best, specific gravity or density being an infallible test.

Gum (*nyssa multiflora*) must not be confounded with the sweet gum or pepperidge scattered so plentifully over the northern continent, as it is of an entirely different nature, being limited in its geographical range, and can be found fit for use only in some few of the middle states, and in the swamps of Maryland, but the trade is supplied largely from the sea coast of New Jersey where it is found in perfection.

The season best suited for cutting this timber is in December or January. Being of a peculiar nature it requires great care in the preparation for drying. With careless handling it is rendered worthless, or if worked before thoroughly seasoned it will be valueless. Unlike the elm the outer bark is removed from the entire length of the stick; five or ten feet exhausts all that is tough enough from each trunk. After removing the outer bark the sticks or logs are cross-piled under dry, light sheds for a period of three years or more, varying with the diameter of the stick.

The timber at the expiration of this time is ready to be manufactured into hubs, and is nearly indestructible, being fine grained, heavy, and so interlocked in growth as to make it difficult to split with wedge or axe.

Unfortunately it has become customary to finish the turned hubs at the factories with a coating of boiled linseed oil in order to show the grain and quality of the wood to better advantage. This treatment is the worst to which turned timber could be subjected, as in every instance it has a tendency to separate the medullary rays (those fine pores which separate the growth rings laterally). This is caused by the oil vitrifying and drawing the grain open while undergoing this chemical change.

After tests and experiments it has been found that the best way to secure uniform results is to have all turned hubs painted as soon as they are finished from the lathe, and with gum two coats of lead priming or wood filler having good body, should be applied. If this course is followed such timber will be free from checking in driving the spokes, and may be kept in stock for years without losing its qualities. Elm also treated in this manner may be depended upon to retain its weight and substance, which it is sure to lose when left exposed to the action of the atmosphere.

An important feature in the working of round timber is its

sensitiveness to the budding season, which occurs in the months of March and April, and renders it difficult to operate upon without splitting.

There is no variety of timber which is free from this sympathetic action, and, if possible, the wheel maker should avoid these two months in driving spokes, as the hub is often rendered worthless when the vehicle has been used but a short time, caused in most cases by the unequal strain, particularly where the heart is not central with the hub. This sympathy with growing nature is continued until the timber becomes worthless from age.

#### Best Timber for Spokes and Rims

*Carya Juglandae*, known to the trade as hickory, is classed among the walnut family on account of the leaves and flowers having the same formation, but hickory stands alone in the peculiar virtues of its timber. There are six distinct botanical varieties widely scattered over the states mentioned.

The first variety is the *carya alba*, or white shag bark hickory, found in New York, Pennsylvania, the western states, part of the Southern states, notably Virginia and North Carolina. This tree flowers in May. The timber when grown on good clay soil is good, provided the tree is cut in its prime and properly season, but when old or of thick forest growth it is too soft and brash.

The second, *carya sulcata*, or shell bark hickory flowers in April, and is found in the western states, part of the southern states, and in the mountainous portions of the middle states. The timber is red and very brash or brittle when dried, and is subject to rapid decay.

Third, the *carya amara*, or bitter nut hickory, is a fine large variety, which flowers in May and arrives at perfection in rich heavy soils. It is found in New York, Pennsylvania, New Jersey, Delaware, Maryland, and to some extent in North Carolina. It is a fine large variety and the timber is sound and elastic, but on soils charged with surface iron very apt to contain black streaks, and in seasoning to become soft and brash. There is no variety so sensitive or changeable to the influence of soil or climate, good and bad, being found within a few rods of each other.

Fourth is the *carya porcina*, or pig nut hickory. This is the monarch of the hickories, because of its superior qualities. It flowers in May and is found in the eastern states, parts of New York, Pennsylvania, New Jersey, and Delaware. There are several sub varieties, all of which are good timber, being heavy, elastic, nearly all white in color, generally straight grained and surpassing durability.

Fifth is *carya aquatica*, or water hickory. It grows on wet, marshy soils and is very deceptive in appearance of the timber, being fine grained and white, but not durable or strong. It seems to prefer the climate of the Virginia valley.

The sixth variety is the *carya olivaforma*. Not being a timber used we will not describe it further than to say it is esteemed for its fruit, the pecan nut of the south and southwest.

The above six varieties comprise the family of the hickories, and, as before stated, climate and soil may cause many sub varieties, which acquire local names differing from the above, but all belonging to the botanical divisions named, and combined, have a geographical range from thirty-two degrees to forty-five degrees north latitude and from ten degrees west to five degrees east from Washington (of longitude).

There is a diversity of opinions in regard to the season most suitable for cutting this timber, but the experience of those who have made this a business selects the month of August, at which time the timber is more solid, as vegetation is at rest, and timber cut in this month will retain its weight after seasoning. It is also free from the attack of the insects which play such havoc with this fine timber. The writer has made a study of these insects and can give as a rule to be adhered to by those keeping hickory in stock, to select some place for storing never used for the purpose before. If this is done and the stock examined in May and June, thoroughly dusted and repiled there is absolutely no danger of the worm, providing

the timber was cut in the month first mentioned. These pests are introduced by the use of spokes and rims in whose pores the eggs were laid, generally at the factories where the goods take their first shape. August cutting is the only safeguard, and this can be safely stored for years if the above rule is rigidly enforced.

Hickory should never be kiln dried, as the elasticity of the fibre is thereby destroyed and the timber rendered stiff and rigid, a quality much admired by some wheel makers, but which renders the wheel less durable and much harder upon the boxes and axles. After collecting the experience of some of the oldest and most successful wheel makers we can safely say that the best hickory is that which grows upon heavy, clay soil in open groves or hedge rows and notably found in New Jersey, Pennsylvania, Delaware, and some portions of Maryland. The reasons of this choice are that the tree comes to maturity before being worked into spokes or rims, which is not the case with the young timber of the west and south, which possesses weight but requires cooking to stiffen, its sweet young substance making it subject to worms, and rots from undue dampness or exposure.

#### BRIEF MENTION OF THE ILLUSTRATIONS

The Henderson Roadster, Model 44, is built on the same chassis as the Henderson, Model 46, five passenger touring car. All the luxury features of the touring car are embodied in the Roadster.

Some of the specifications are unusual. The gasoline tank is located under the cowl of the dash, giving the shortest possible gasoline line to the carburetor and making possible unusually strong gravity pressure. Left hand drive is adopted with a four-inch gear shift lever located between the cushions of the front seats, making the controlling of the car as simple as an electric. Other features are: 40-44 h.p. motor; dynamo electric lighting system; self starter and inset speedometer and grade indicator.

L. Glesenkamp Sons & Company, of Pittsburgh, have completed a complete palace automobile funeral car for the undertaking firm of J. J. Flannery & Brother, of Pittsburgh. The body is of unique design and is mounted on a special chassis planned and built by the Packard Motor Car Company.

This single-unit funeral procession is a model of convenience and luxury. Its accommodations are ample for minister, pall bearers and mourners. The corpse is carried in a compartment behind the chauffeur and space is provided in a division above for flowers. Altogether there are four compartments, the others being for the driver and with two sections in the rear. The coach carries 32 persons.

The body has carriage finish, the dark blue panels having black moldings. The chassis is painted azure blue. The interior woodwork is oiled finished solid mahogany. The seats are upholstered in dark blue leather. The sides of the interior of the car has the same scheme of upholstery. Attractive curtains shade the windows.

The coach is illuminated by electric lights and is provided with electric fans and a telephone system connecting the various compartments and the chauffeur's seat. The coach also is equipped with a water cooler, washstand and other conveniences.

The car is not intended solely for funerals. With such luxurious accommodations it is expected that it will be an ideal touring car enabling the host to take his family and all his neighbors on a spin. Suggestions have been made for the builders to design a car on similar lines to be used as a "land yacht" on long tours. It is explained that quite as much room would be provided as in a 30-foot trunk cabin motorboat, and with the addition of a cook's galley and sleeping berths the car would rival a comfortable boat.



# Paint Shop.

## STENCIL DECORATION ON WOOD OR LEATHER

We have three ways of decorating the surface of wood with flat color—inlay, painting and stencil. Stencil is a more rapid process than either of the other two, though it exhibits attributes of both methods. Standing midway between the inlay worker and the painter on wood, to which should the stenciller look for his standard of legitimate color and form? For stencilling on wood has more strict limitations than perhaps any other branch of stencil work.

From the painter the stenciller borrows his facile pigments, but from the inlay worker he must take the laws of his design and coloring.

Leaving out of consideration the complexity of the later period of inlay, which includes elaborate presentments of architectural features in perspective, the characteristics of intarsia pattern can well be adapted to stencil design. The general display of the pattern must be decorative and graceful, consisting of strong, telling lines and definite forms in the detail. The more conventional the treatment the better, even where the plant growth is deliberately attempted. Confusion of overlapping forms, so pleasing in painting, is to be avoided in stencilling on wood; the coloring, by rigid adherence to woody tints, is so realistic and the mannerism so definite, that the strictest selection of possible effects in nature is necessary; therefore, the picturesqueness of surfaces crossing each other can only be rendered to a limited extent—two, one behind another, is as much as is generally satisfactory, says Carton Rayd, in *The Decorator*.

Modifying the tint in a single form, as, for instance, two colors blending in a single leaf, is not legitimate in stencilling on wood, though it is quite within the compass of the stencil process itself.

With regard to the stencil "ties" it is well to make as few of them as possible, as they break up the pattern and destroy the necessary uniformity of the surface. They must be an essential feature of the pattern, as they are a mechanical necessity of the process.

Where fine lines are wanted to give character and direction within the masses of the pattern, they are best painted on with a long, fine brush, either in a color harmonious with the background, or in black.

Stencils on wood can be executed in oil color or in stains. Oil paint is strong and effective, but it hides the grain of the wood; transparent stains which allow the woody texture to show through, retain to that extent one of the natural charms of the material.

Stencilling on wood already colored or varnished must be done with oil paint, thinned down with turps and Japan gold size. Its opacity makes it effective on the colored ground, though the grain of the wood is hidden. When quite dry it can be varnished with a wax finish.

Perhaps the most refined and artistic results are obtained by stains on new wood; oil stain, water stain, varnish satin, spirit stain, are all available. Stains are transparent colors blended with oil or varnish, or dissolved in water or in spirits of wine.

The process of leaving some part of the wood clear is as follows: When using oil stains cut a stencil plate on thin paper to cover all that is to be left out. Saturate it with paste or thin glue size and lay it on the wood; when it is dry apply the oil stain to the exposed parts; when this is dry damp off

the paper and we shall have a combination of plain and colored surfaces; varnish or wax can be applied as a finish.

If it is desired to have the pattern a color on a colored ground, when the paper shield has been removed apply another oil stain over all the surface; the dry wood will quickly absorb it and whatever lies over the non-absorbent first coating will easily wipe off.

When the pattern consists of several colors on a background, cover the background with a sized or pasted shield, then work the pattern up in the various colors selected; remove the shield by damping and cover the whole surface with a water stain; the water stain will not lie on the oil stain, so the background color can be relied upon to tell clean and clear against the pattern.

In using water stains the process is reversed; the portions of wood to be "stopped" (rendered impervious to color) must be coated with oil varnish or Brunswick black, subsequently sponged off with turpentine.

Spirit varnish can be used for stencilling, either untinted with a view to telling light against a color applied in water stain, or with some coloring material added to it, when the effect will be one color against another.

## STENCIL POINTERS

Paper plates used for distemper are apt to buckle on account of the wet; they should be laid out flat, carefully sponged to remove the color and wiped dry with a soft cloth. They should then be given a coat of shellac and spirit size.

Paper plates used for oil color, which tends to fur up the edges very quickly, must be laid flat on newspapers and brushed over with turpentine; the paper absorbs a good deal of the color; the rest must be wiped off with a soft cloth. Plates should be frequently coated with shellac size.

To store stencil plates they should either be pinned out flat on a wall or laid in drawers or portfolios with sheets of stout paper to separate the plates and prevent them from interlocking and tearing each other.

After oil paint the brushes should be steeped in turpentine, getting well up into the bristles. When the turps and paint have been dried out on a cloth each brush should be treated separately with strong soap and rubbed round and round in the palm of the hand to create a good lather, the paint being well squeezed out from the setting in of the bristles. The brushes should then be well rinsed and shaken to get the bristles into place.

## POINTS ON LETTERING

The student of lettering is apt to think that ability to draw the various style letters is all that is necessary to make a finished sign writer. Certainly it goes a long way, but it is equally important to know when and how to use the types of letters at his command. Every sign writer has to face this problem.

Roughly, letters may be classed under two heads, heavy and light, or thick and thin. It cannot be said that either class gives better results than the other. We may admire a sign done wholly with thick, heavy letters, and at the same time be pleased with another sign where the lettering is light and thin.

It is impossible to lay down rules with which to guide a beginner in every job he may have to do, but by pointing out some rough and ready principles he might be helped to solve problems for himself.

Heavy lettering may be necessary to give balance to the

composition of the design. It also contrasts to advantage with lettering of average type.

For a fair, average sign writer's letter of the plain block or Egyptian type, a good proportion for thickness of parts is two-ninths the height. This is a letter which is, say, about one-third higher than it is wide. In such a letter all parts would be about equal in thickness, but it is invariably as well to make horizontal bars of letters thinner, as they have a tendency always to look thicker than uprights. The thickness arrived at by this plan would serve as well for the thickness of the uprights of Roman, Clarendon and block letters.

Again, when a letter is made wider than about two-thirds its height, some writers increase the width of the upright proportionately. This is a good plan, particularly for ordinary work. Where a letter is as wide, or wider, than it is high, the upright might be considerably stouter. In heavy letters this increasing the width of upright is extremely advisable.

With thin, artistic lettering this increase in thickness of uprights of wide letters is not always advisable. In this case thin letters are best and it may be almost accepted as a rule that the thinner letters are made the more even becomes the width of uprights and horizontal parts.

When first purchased, writers' pencils are naturally chisel pointed, that is, the point spreads out to a square instead of a rounded point. It is a wise plan to preserve this square point. It then becomes like a coach painter's broad lining pencil. It makes a line which never requires touching a second time. In the case of a pencil with a "feather" or rounded point, the line made has no definite thickness, but varies according to the amount of pressure put upon the pencil. For the main portions of a letter the broad side of the pencil may be used. For finishing ends and corners use the edge or narrow portion.

### PIGMENTS CLASSIFIED

The Decorator is responsible for a paper read by F. W. Nicholson before the Paint and Varnish Society (England), which ought to interest the painter and varnisher who want to know the whys and wherefores of things.

The pigments may be divided into distinct classes according to their base or their acidulous part.

If classified according to their bases we will have alumina, barium, calcium, cobalt, cadmium, iron, lead, mercury, and zinc base pigments.

The aluminum, barium, calcium and zinc base pigments will not be affected by sulphur or its compounds, that is, in regard to change of color.

Cadmium, iron and mercury are only slightly affected, but copper and lead pigments blacken.

Divided according to the acidulous combination the classes will include acetates, carbonates, chromates, hydrates, oxides, sulphates and sulphides.

Paris green and verdigris belong to the acetate class; white lead (corroded) and whiting to the carbonate class; iron oxides, litharge, red lead, silica, etc., to the oxide class; chrome yellows, chrome greens and zinc chromate to the chromate class; sublimed white lead, terra alba, barytes and some Venetian reds to the sulphate class; and lithopone, cadmium yellow and English vermilion to the sulphide class.

Ultramarine blues may properly be included in the sulphide class as they contain sulphur.

Prussian blues belong to an isolated cyanogen class and approach the sulphides in their action on other pigments, that is, they produce a detrimental change of color with certain other pigments.

From the above it is obvious that the sulphide pigments should not be mixed with either copper or lead base pigments on account of darkening.

In similar manner, Prussian blue should not be mixed with pigments having an alkaline reaction.

The oxides, sulphates and chromates will mix with each other without any material detriment.

In conclusion it may be said that the pigments most permanent to light are all of the whites; all of the blacks except black lake; yellow ochre, medium and orange chrome yellow, Venetian red, the iron oxides and American vermilion, chromium oxide green, terra alba, lime green, zinc green and medium chrome green; Prince's mineral brown, raw sienna and raw umber; cobalt and ultramarine blue.

Safe pigments to use with lime are silica and similar inert whites, zinc oxide and lithopone; yellow ochre and zinc yellow; Venetian red, iron oxides, Indian red and English vermilion; lime green, chromium oxide, terra verde and ultramarine green; Prince's mineral brown, raw umber, raw and burnt sienna; cobalt and ultramarine blue; lamp and carbon black. The regular lime proof mortar colors are zinc oxide, yellow ochre, Venetian red, lime green, Prince's brown, ultramarine blue and lamp black.

In regard to sulphur fumes and sulphuretted hydrogen gas (hydrogen sulphide), the effect on certain pigments will be influenced somewhat by the surrounding atmosphere. A dry and damp atmosphere, the presence of ammonia fumes, or of acetic acid from vinegar all contribute to produce a slightly different effect.

If conditions were always the same it would be an easy matter to foretell the effect of any of the elements, but with varying conditions it is impossible to prophecy beforehand just what the result will be.

Experimental work with paints and scientific research will eventually clear up many points not now thoroughly understood.

The master painter of today is better educated and more familiar with paint material than the previous generation of house painters, and it is evident that he must be, as present conditions are very different and he has to contend with difficulties unheard of by his forefathers.

The master painter has the advantage of the chemist and the factory foreman in that he thoroughly understands the practical application of the paint material and can closely watch the gradual effect of the elements on the finished work.

### PATENT LUBRICATOR

Grind together blacklead (plumbago) with four times its weight of lard or tallow. It is used to lessen friction in machinery and to prevent iron from rusting. Camphor gum, in the proportion of seven pounds to the hundredweight, is sometimes added. This was once a patented article. The above is also an excellent ointment for tetter, ringworm, and other skin diseases. A little applied to sores on horses will be found a good healing remedy.

### WHAT MAKES WHITE LEAD CHALK?

In the current number of the Paint, Oil and Drug Review there is an interesting article under the above head. It is something to know that the firm who issue the article, being white lead corrodors, acknowledge that white lead does chalk. The purport of their remarks can be gauged by the following extracts. They say: "Nothing in the world but a lack of linseed oil—and it also follows that in exact ratio to the use of linseed oil—lead chalks, until that point is reached when enough linseed oil is used, then chalking is indefinitely delayed, and the paint is the highest form of coating known to science through the ages." Here one might naturally stop to observe that the advantage white lead has over most other pigments is that it possesses great body, but if a large amount of linseed oil is added, then that body is correspondingly lost. We agree with the following remarks: "The province of paint is not to hide the surface with one coat. It is the practice to make the paint so thick with lead that the priming coat does the work to be done by two or three coats, as far as concerns hiding power. This is not right. The priming coat should have so much linseed oil as to have comparatively little hiding power, as it must furnish sufficient oil for the absorptive surfaces, as well as

for the paint pigments used on the first coating. If this is done, there cannot be enough body on the priming coat to hide the surface, and it is only after the last coat is applied that the surface should be hidden effectively."

And here one may stop and make a comparison between white lead, for which such great claims are made with other pigments, say, for example, zinc oxide. The above is precisely the argument that should be applied to those who object to this pigment, that is to say, that painters' work is not carried out in one coat, but usually three, and in many cases four. It is the ultimate result that one must consider, and not the details, excepting so far as they make up for the final result.

### WISCONSIN VEHICLE STATISTICS

The Census Bureau has just issued its advance bulletin of Wisconsin manufacturing statistics. Fifty-one industries are separately reported and 24 other branches of manufacture lumped under the general heading "all other industries." Those listed separately are reported as producing over a half billion dollars worth of products in the year 1909.

The portions of the report that we find most interesting are those dealing with the production of carriages and automobiles. The following table shows the number and value of the principal products of Wisconsin carriage and wagon factories in the years 1909, 1904 and 1899. No official figures of the industry more recent than for 1909 are available:

Product	1909	1904	1899
Total Value .....	\$8,899,171	\$8,089,491	\$7,033,945
Carriages (family and pleasure):			
Number .....	24,726	23,466	36,323
Value .....	\$1,519,096	\$1,520,841	\$2,022,608
Wagons:			
Number .....	92,011	83,916	70,210
Value .....	\$4,853,561	\$4,396,693	\$3,308,455
Business—			
Number .....	11,564	12,910	*
Value .....	\$732,544	*	*
Farm—			
Number .....	80,376	70,814	*
Value .....	\$4,102,301	*	*
Government, Municipal, etc.—			
Number .....	71	192	*
Value .....	\$18,716	*	*
Public conveyances:			
Number .....	90	103	101
Value .....	\$33,390	\$39,720	\$31,900
Sleighs and sleds:			
Number .....	17,720	15,365	17,451
Value .....	\$399,310	\$343,509	\$325,105
All other products, including parts and repair work.....	\$2,093,814	\$1,788,728	\$1,345,876

\*Figures not available.

In 1909 the value of carriages represented 17.1 per cent. of the total value of products, that of wagons 54.5 per cent., that of public conveyances four-tenths of 1 per cent., and that of sleighs and sleds 4.5 per cent. Farm wagons were the most important product manufactured, contributing 46.1 per cent. of the total value of products for the industry in 1909. While there was a slight increase in the number of carriages built in 1909 as compared with 1904, there was a slight decrease in their value. Both the number and value of carriages show a considerable decrease as compared with 1899, this being the result of the increasing use of the automobile.

The automobile industry has developed in Wisconsin almost entirely since 1899. In 1904 there were but six establishments with products valued at \$1,875,000, while in 1909, but five years later, there were 30 establishments with products valued at \$11,440,000, and giving employment to an average of 4,298 wage earners.

A rapid development is shown by the table below to have

taken place in the manufacture of automobiles and of automobile bodies and parts between the years 1904 and 1909, and surprising as is such rapid growth, it is believed that if figures from 1909 to 1912 were available, the ratio of increase would be still more astonishing. The number of automobiles manufactured increased from 2,390 in 1904 to 5,591 in 1909, a gain equal to 133.9 per cent. Of those built in 1909, 5,559 were for passenger use and but 32 for business purposes. The commercial truck end of the business would loom up to wonderful proportions in figures compiled in 1912, as compared with the meagre output of 32 vehicles in 1909.

The following table, which gives the latest official figures available shows the number and value of the different products of the motor car industry in 1909 and 1904:

Product	1909		1904	
	Number	Value	Number	Value
Total Value .....		\$11,440,242		*\$1,875,259
Automobiles (gasoline) ..	5,591	7,085,562	2,390	1,856,694
Runabouts, touring cars, and cabs .....	5,559	7,050,862	2,378	1,846,294
Delivery wagons and trucks .....	32	34,700	12	10,400
All other products, including bodies and parts and repair work .....		4,354,680		18,565

\*Exchange the statistics for two establishments engaged in the manufacture of automobile bodies and parts, to avoid disclosure of individual operations.

†Electric machines included to avoid disclosure of individual operations.

### TRUCK MAKERS MEET

The truck manufacturers held their second annual convention on June 4 at the headquarters of the National Association of Automobile Manufacturers. There were 22 representatives present.

The chief work of the convention was the recommendation to the N. A. A. M. of the uniform guarantee framed at the last meeting of the organization. This was recommended practically as it was made up in its original form but the clauses were rearranged. The form of guarantee recommended includes a 90-day limit, provides for replacements only where defect of workmanship or material is discovered within that limit and separates the warranties of replacement from the contract of sale. The convention also recommended to the N. A. A. M. that a warning plate be authorized for every truck turned out. These plates, according to the form suggested, will contain the size designation of the truck, the chassis weight, body allowance, useful load weight, total loaded weight and rated speed. The caption will read: "Caution; overloading and over-speeding will void your warranty."

The committee on production and sale report that up to January 1, 1912, 82 manufacturing companies had made and sold over 18,000 trucks of various types and styles. This is believed to represent about two-thirds of the total of about 27,000 trucks valued at \$35,000,000.

The matter of insurance was discussed informally and the whole subject was put in the hands of James S. Marvin, assistant general manager of the N. A. A. M., for examination and report.

The executive committee held a session in conjunction with H. F. Donaldson, Coker F. Clarkson and W. P. Kennedy, of the Society of Automobile Engineers, prior to the assembly of the convention, when it was agreed that at this session it should be recommended to the association that the manufacturers should take up the things that have to do with the selling and use of trucks and that the S. A. E. would co-operate on the standardization of units. The convention adjourned to meet again November 7.

# Automobile Department

## THE AUTO BODY

The landaulet has become extremely popular of late, and no doubt this kind of carriage has many redeeming features; but in the balance, these are outweighed by its deficiencies in other respects. The extra weight must be considered. A landaulet is bound to weigh heavier than an open car, and thus, even if the engine can stand it, tires cannot. At least, not for so long. And I never feel—when riding in an open landaulet, that I am getting as much fresh air as I would be if riding in a touring car. The view is also more obstructed, and a greater resistance is offered to the air with a landaulet.

### Panels

Aluminum panels are lighter but more costly. Sheet-steel panels are cheaper, but weigh more. The difference in weight, however, is only slight, whereas the difference in cost is sufficient to warrant a preference for steel.

As regards the molding or beading which is fixed around the body, if this be left to the coachbuilder he will put a simple molding on; but a double molding looks infinitely better, and entails but slight extra cost. Now, as a rule, the molding used is made of some soft metal which is tacked on to the panels, with the consequence that wherever ends of lengths meet there must be some paste applied to fill in cracks and fissures, etc. Thus, when painting and varnishing are finished one can hardly detect a joint if the work is well done. But from experience everybody must have noticed how in time this paste cracks or parts from the metal, thus considerably detracting from the appearance of the car. For this very reason then I prefer the molding stamped out in the panel itself by the instrument designed and used specially for this work.

When a man buys a moderate-sized car, just suitable for his wife and family, he is often tempted to put a five-seater body on it, and then invariably every time he goes out all seats are occupied, and may be "just one more" is crammed on a stool. Thus the tires and springs, etc., are put to their severest test, and small wonder it is that "so and so's" tires wear badly and always burst. Occasionally a leaf of a spring snaps, either at the time or perhaps later on when there is only a small load up. Great expense and trouble are the rewards of the too generous and ignorant owner.

Of course the color of the car is an item that must be governed solely by the individual tastes of the owner; but even so, there are certain colors that might well be eliminated, as for instance, a glaring post-office red, or vivid canary yellow, and many other gaudy colors which always attract attention and too often call forth undesirable comment. Then there is a fawn-colored leather sometimes used on cars. This makes a pleasing contrast if the car is painted dark blue, but contrary to what one might expect. This fawn leather shows dirt very badly, and moreover, after a little wear, it cracks up in all directions on its surface, each crack looking as though it had been lined with a pen and ink. In my opinion, the very quietest and richest (and, therefore, best) color for both car and upholstery is a dark royal blue, picked out with fine peacock blue, or chrome lines. These combinations will be found anything but gaudy and yet not in the last sombre, thus fit for any gentleman's car.

Always specify with the body builder to supply pockets in all doors except the off-side front one, as the gear lever would interfere with the usefulness of one in that position. These pockets always find such favor with the ladies for storing their veils and handkerchiefs and other things. A good tip in the hanging of doors, to my idea, is to have the hinges of all

doors toward the engine, for then if the door happens to be open or unlatched while the car is "under way," it would not suffer being smashed off when the inevitable lamp post struck it, but would slam to.

I think the corrugated aluminum for steps has amply proved its superiority over rubber for this purpose, because it is cheaper and because it needs no whitening, and because it is so readily washed down and requires only a rub over to make it clean and bright like new. Oil or gasoline spilt upon it have no effect whatever, whereas rubber cackles up and softens, and looks very bad. Aluminum wears very well, and small worn patches can be replaced by new pieces at trifling cost.

It certainly adds to comfort, especially where no paid driver is employed, to make ample provision in the floors and other places for getting at parts of the chassis for the purpose of lubricating, etc. I have seen many a car in which the floor boards at the back have either been fastened down or else have in other ways required a deal of trouble to get them out before one could gain access to parts below, whereas if proper provision were made beforehand, how much quicker these little jobs could be done and how much more often would they be done, with less mud and grease on clothing. I therefore suggest that a little square trap door be made just over the universal joint and another over the gasoline tap, and provision made generally for getting at brake adjustments, etc.

Of all the appliances now made and sold for quick changing of damaged tires there does not seem to me to be anything handier or better for use than the "detachable rim."

Never on any account omit to specify the fitting of inner shields on the mudguards, a partition of either metal or patent leather from the inner edge of the splashes to a point below the body. This saves the paint so much and keeps it clean much longer than without them. I know, of course, it is already universal practice to fit them on the front guards, but it is often overlooked on the hind ones. Let the front mudguards project at the bottom about 6 inches below the step, as this saves the under surface of the latter from being constantly caked with mud.

The hood is the last item and one worthy of the consideration of everybody, for it can be considered from many points of view. First of all, the construction of a hood—I speak of the cape-cart hood for an ordinary touring car. It is of the utmost importance that a hood should be easy of manipulation, in short, the "one-man" hood seems to be ideal. But I have never been able to convince myself that the "one-man" hood looks as smart as other kinds with four hoops. My hood is a "four hooper," and though constructed so that two people are required to raise or lower it, I always manage to do it myself by getting in the back of the car and lifting the front two hoops from the front bracket on to the back bracket or vice versa. True it is—I sometimes fall amongst my passengers, but after all that usually only provokes a bit of merriment. See that the sticks do not impede easy entrance to either door, and see that the small auxiliary hoop in front projects well forward over the screen. A stout double-texture canvas should be used, and it is advisable to have the edges leather-welted. A large celluloid window should be provided at the back so that the driver can see when backing or turning; ample windows should be also provided in the side curtains for the same reason. Many an accident has happened through neglect of this small matter.

Ordinary khaki canvas soon gets very dirty, indeed in about six months it becomes quite disreputable if the car is used at all frequently, and thus it is better and cheaper in the end to

have a slip-on cover made at the beginning to fit it when it is down. But even then there is nothing to protect it from dirt when it is up, and it must sooner or later succumb, however careful one may be. That is why I have just recently had a new hood made of an imitation leather and it always looks clean. There is, of course, the additional advantage that it does not require to be left up to dry after the rain has stopped. Many a canvas hood has been ruined by neglect of this precaution.

The advantages of real leather hoods seem altogether out of proportion to their disadvantages for they are extremely dear in comparison and very heavy.—H. K. in *The Motor*.

### THE AUTOCLIPSE GENERATOR

Those who have ever had experience with the Autoclipse gas lamps and generators will always be found to speak very highly of them.

The generator has a number of new and one or two original features. In the first place it is fixed permanently in a stout mahogany case, the lid of which opens to give access to the gas outlet taps, the water filling orifice, and the milled head of the needle valve for controlling the supply of water to the carbide. The lower half of the front is hinged and, on this being opened, the carbide chamber will be found to be resting upon a plate with a milled edge. This plate can be revolved, and as it is carried on a threaded pillar (the thread of which engages with a fixed nut in the bottom of the case) the rotation of the disc causes it to descend, and the carbide carrier descends at the same time. Inside the carrier, as a removable fitting, is the carbide cage with a perforated bottom through which the lime, which forms the residue after the production of the gas, falls into the carrier.

Holes are bored through the four corners of the case, those at the back best being reached if the rotatable disc be entirely screwed out of its socket, says *The [London] Motor*.

The production of gas is automatically controlled by the pressure of the created gas holding the water back in the reservoir, thus securing the freedom from attention after the water is turned on, that is one of the good features of the diving bell type of generator. But the fact that the water supply can be turned right off is the feature that overcomes the great disadvantage of the diving bell type. When the water is turned on, the water valve is opened to the full. At first there is a small excess of gas production. This excess passes up the water inlet tube and bears upon the surface of the lower of the two reservoirs and forces the water in the lower reservoir back into the upper reservoir. The upper reservoir feeds the lower and from the lower one the water drips on to the carbide. Thus the production of any excess beyond that usable by the gas jets, stops for the time being the flow of water. Attached to the outside of the case is a small circular receiver to collect the gas from the generator, and two outlet pipes are provided for connecting up to the lamps. A large plugged orifice permits of ready cleansing of this receiver, which acts as a condenser for any moisture that may come over with the gas. The Autoclipse is free from any of the faults that render cleansing and replenishment troublesome, and it is therefore perfectly satisfactory to deal with and to use.

### IRVIN COUPE-LANDAULET BODY

#### See Fashion for June

Though the inside driven coupe fills in a measure the popular demand for an "all-weather" type of body, it still leaves something to be desired. When the windows are closed it becomes a closed car in every sense of the word, but when the windows are opened it does not become an open car to the extent that might be desired. The landaulet offers a partial solution of the problem, but there are those to whom

the landaulet does not appeal either by reason of its size, which increases upkeep cost, or because the owner cannot drive the car and at the same time be protected from the elements. It is to bridge the gap between the coupe and the landaulet that the R. J. Irvin Mfg. Co., the Indianapolis body maker, has brought out what is styled the Irvin coupe-landaulet, a type of body which is much in vogue abroad and which is shown by illustration.

In perfecting the new body the comfort of passengers has been maintained as of prime importance, and to this end the upholstery has been given unusual attention with a view to producing the easiest riding qualities possible. In addition to the usual curled hair, the cushions are rendered even softer and more luxurious than usual by the insertion of extra long coil springs. Another feature is that the doors have been made wide, the sills measuring 26 inches. The provision of abundant storage space likewise reveals careful designing. Under the seat, which is 50 inches wide and therefore seats three passengers without undue crowding, there is space sufficient to store two suit cases. The back upholstery of the seat is arranged to swing outward on hinges and discloses a roomy cupboard suitable for the carrying of robes or clothing, which may be hung on hooks, and also spare tubes and tools. Numerous shelves are provided for the reception of small articles, and at each side there are two circular spaces in which thermos bottles may be carried right side up. Additional storage space is provided at the back of the body in a compartment which also contains a 20-gallon gasoline tank.

Entrance to the compartment is effected by means of a wide door at the back. Spare tires inflated and carried on demountable rims are carried at the rear, over the compartment, and are held in place by means of special tire irons.

### A CHEAP FRENCH CAR

When the price of a complete car is reduced below \$1,000 its production at a profit becomes a most difficult matter for the manufacturer who wishes to maintain quality and adhere to approved styles of design. It is thus we find more variety in design among very cheap than among the moderate and expensive cars, for in the former class there is the desire to reduce simplicity to its lowest possible expression to diminish initial cost. The Ronteix, a new light car, has gone through this treatment.

The external lines are those of what we might term the "type" car. Its motor, which is under a bonnet, and behind a plain tube radiator, presents no peculiarities.

The first step in the transmission of the power is a leather-faced cone clutch, also of a standardized design. At this point the designer has sought to introduce that simplicity which results in low cost and moderate upkeep. Mounted on a couple of transverse members forming a cradle is what at first sight might be mistaken for a differential housing. The car, however, is devoid of a differential, the designer arguing that as the outer wheel only travels 4 inches per yard more than the inner one with the steering wheels over at full lock, an equalizing mechanism can be abolished without inconvenience. The housing, therefore, contains but one crown wheel, on which are cut three different sets of spur pinions, the outer ring of teeth giving the first speed, the second set the second gear, and the innermost set the top speed. On the longitudinal shaft passing right through the box, and having a bearing at each end, are two spur wheels having a fore-and-aft movement, controlled by the usual type of change-speed lever and sector. When the rear pinion is brought into engagement it drives the crown wheel forward, and if the forward pinion is brought into mesh with the teeth on the crown wheel it imparts to it a backward motion. One transverse shaft is mounted through the crown wheel. At its outer end it is received in bearings in a bracket attached to the side frame, and on its extremity it carries a driving pinion, from which the power is finally transmitted to the right-hand rear wheel by means of a single



chain contained within a metal case. The whole arrangement is simple, and there are plenty of examples to show that a transmission of this type will give complete satisfaction for moderate powers.

The suspension of the Ronteix is another distinctive feature. The springs on the transverse bar at the base of the radiator are wrapped up to protect them from wet and dirt, without, however, interfering with their extensibility. The rear suspension is based on the same principle, but instead of the spring and levers being placed transversely, they are carried longitudinally. The tension of the spring can easily be regulated, while the tension of the chain is obtained by setting the rear axle in fore-and-aft grooves in exactly the same way as the rear wheel of a bicycle is moved. A simplification has been made of the steering gear. The usual type of steering box is absent, the control being by means of an eccentric on the base of the steering column. On the outer end of the connecting bar attached to the steering arm is a ring within which the steering eccentric is mounted. This arrangement has the additional advantage of allowing the steering column to be inclined practically to any angle.

The standard car is fitted with a three-seater torpedo body, the driver's seat being a separate arm chair, the two rear seats occupying the full width of the car.

### MULE OR MOTOR

See Illustration of Army Motor in Fashion Plates

Mule or motor? is a question of paramount importance with the war department of the United States these days. The army knows the mule—knows he is a dependable animal at all times, a beast of burden that uncomplainingly serves his country in his own humble way, which always can be relied on in both times of war and times of peace; but with the motor, that's a different proposition and one that officials of the war department are at present engaged in discussing with great earnestness in hopes of solving the problem of military land transportation which is no different now than it was 50 years ago, or if so, not so different as to be noticeable. Motive power is the mule now as it was in the days of our forefathers, despite the advent of the motor.

The government stills stands uncommitted as to the newer methods of military land transportation. It has not taken up the motor as have several European countries—not but what it would like to, but because the war department is not as yet convinced that the motor meets the peculiar conditions that exist in this country—conditions that are not found elsewhere. Here we lack roads, whereas in Europe the highways are almost boulevards. Here, like as not, the soldiers might be sent into territory where even the mule would be handicapped in making progress, where a great army would be tied up because of inability to get supplies and keep in touch with its base. Herein, then, lies the real secret why the United States government does not stand committed to the motor car. The power vehicle has made good so far as mechanical perfection is concerned—we all admit that there is little question but what the modern motor can do its work day in and day out without wearying when the roads are good or even passing fair, but we are far from being sure that it could keep pace with the army where traction is lacking.

Traction—that's the keynote to the whole situation so far as the government is concerned. When the manufacturers of motor trucks can satisfy the government that their cars can go any place a mule can, then that day will the motor truck as a mechanical motive power in military land transportation be given serious consideration. The manufacturer who can put his truck into service and run it where roads there are not, where grades are so steep as to make even the nimble-footed mule put on tire chains, is the man who will be a great benefactor to the motor industry.

So far the federal government has not committed itself very

strongly in the matter of motor trucks. The quartermaster-general at Washington is authority for that in that his report shows that at the present time Uncle Sam is the owner of just twenty commercial motor vehicles. There are seven in use at the quartermaster depots in the United States; three which are being given experimental tests by the war department and seven more working at the army posts in the Philippines—surely not a formidable outfit for an army the size of ours.

The government is not looking for speed when it comes to motor trucks. Speed is not needed in the army, for even our friend the mule is plenty fast enough to keep up with the infantry which travels on its marches at about  $2\frac{1}{2}$  miles an hour. But even that pace is terrific in cross-country work where a truck cannot obtain traction. A mule can go places where the motor truck cannot in its present form and because of this versatility, if you wish to call it such, he has the preference at the present time.

My investigations have led me to believe that in order to have a convincing argument to advance to the war department it will be necessary to fit the motor truck with some sort of a device which will give this traction and I am a firm believer in what is known as the caterpillar, a device which carries its own road with it, which makes a boulevard out of a morass and which can run along at 3 or 4 miles an hour regardless of highway conditions. The caterpillar has been used with success abroad and over there they are not in the need of such a device as we are. Briefly, the caterpillar drive is described as follows:

The weight of the engine is carried by two trucks which are spring connected with the main frames. Each truck has four wheels smaller, but built on the exact principle of the car wheel. These eight wheels, four on each side, run on a steel track, which is made of steel links and really is an endless chain passing over two sprockets, front and rear. The rear one is the drive sprocket and the front wheel a blank sprocket acting as an idler. The truck wheels run on the inside of the track or chain, which follows out the exact principle of a locomotive and steel rail. On the outside of the track on each link is a steel shoe. This shoe comes in direct contact with the ground. This track is equipped with these shoes in widths of from 15 to 36 inches, depending on the condition of the ground on which the truck is being used. The length of the caterpillar track, in contact with the ground constantly, makes it impossible to drop into holes.—B. F. Miller, U. S. A.

### AUTOMOBILE EXPORTS OF THE UNITED STATES AND OTHER LEADING COUNTRIES

Twenty thousand automobiles will be the export record of the United States in the fiscal year which ends with the present month, and their value, including parts and accessories, will approximate \$27,000,000. This statement is necessarily in very round terms, for the Bureau of Statistics, upon whose figures the estimate is based, has at present detailed figures covering but ten months. They show, however, nearly 17,000 automobiles exported to foreign countries in the ten months ending with April, valued at  $16\frac{1}{2}$  million dollars; parts thereof,  $3\frac{1}{4}$  million dollars; tires, sent separately from machines under the head of exports of rubber manufactures, over two million, and automobile engines two-thirds of a million dollars, making a total for the ten months of practically 22 million dollars, and fully justifying the assertion that for the full twelve months the total will approximate and probably exceed \$27,000,000. This figure includes only the exports to foreign countries and is exclusive of the 900 machines sent to our non-contiguous territory, valued at \$1,500,000.

This total of \$27,000,000 worth of automobiles sent out of the country in 1912 is in marked contrast with the figures of a decade ago, 1902, which, by the way, was the first year in which the Bureau of Statistics found the exports of automobiles of sufficient importance to justify a separate record, the total

for that year being a little less than \$1,000,000, as against \$27,000,000 ten years later.

The growth in exports of automobiles from the United States has been especially marked during the period since 1905, this growth being coincident with the expansion of the domestic industry and a corresponding decrease in imports of automobiles. Thus in the period from 1899 to 1904 the value of domestic manufactures of this class of articles increased about 25 million dollars, from 5 million dollars in 1899 to 30 million in 1904, an increase of 25 million dollars; while in the period from 1904 to 1909 the value of the output increased practically 220 million dollars, from 30 million dollars in 1904 to 249 million in 1909. Accompanying this notable growth in production, the imports of automobiles decreased from  $4\frac{1}{4}$  million dollars in 1906 and  $4\frac{3}{4}$  million in 1907 to approximately  $2\frac{1}{2}$  million dollars in 1912.

While France still leads the world in exports of automobiles, the United States surpasses that and all other countries in rapidity of growth of production and exportation. For example, our own exports of that class of articles have increased from \$5,000,000 in the calendar year 1908 to nearly \$20,000,000 in 1911; while in the same period those of France increased from \$24,600,000 to \$31,700,000; those of the United Kingdom, from \$7,600,000 to \$15,500,000; those of Germany, from \$3,000,000 to \$11,000,000, and those of Italy, from \$5,500,000 to \$6,100,000. Thus in the brief three-year period from 1908 to 1911 there was an absolute gain of about \$15,000,000, or 300 per cent. in exports from the United States; of \$7,900,000, or over 100 per cent. in those from the United Kingdom; of \$8,000,000, or 266 per cent. in those from Germany; and of \$600,000, or slightly more than 10 per cent., in those from Italy.

Approximately 25 per cent. of the automobiles exported from the United States are shipped to Canada; about 40 per cent. to Europe, chiefly Great Britain; about 20 per cent. to British Australia; about 8 per cent. to South America; and smaller proportions to Mexico, the West Indies, and various countries in Asia, Oceania, and Africa. During the ten months ending with April, the latest period for which figures of distribution are available in the Bureau of Statistics, 4,716 automobiles were exported to the United Kingdom, 4,424 to Canada, 3,034 to British Oceania, 1,282 to South America, 849 to Asia and other Oceania; and 1,502 to all other foreign countries. There were also shipped, during the same period, 410 automobiles to Hawaii, 342 to Porto Rico, and 11 to Alaska.

Of the automobiles imported into the United States, France supplies about one-half. Of the 845 machines imported during the ten months ending with April, 339 were from France, 170 from the United Kingdom, 115 from Italy, 108 from Germany, and 113 from all other countries.

The fall in export prices of automobiles is an especially striking feature of the Bureau of Statistics' figures. They show an average valuation for all automobiles exported in 1909 of \$1,800 each, and in 1912 of \$980, the average export price in 1912 being thus but a little more than one-half that of 1909. This remarkable fall in the average valuation of the automobiles exported is due in part to a general reduction in the selling price of automobiles during the period in question, a disposition on the part of manufacturers to reduce the price of the machines to meet popular demand, but more especially to the fact that large numbers of partially used, or second-hand machines, are in recent years being exported to Canada, Mexico, and the West Indies, thus reducing the average valuation of the entire number exported.

### TO MAKE AUTO WHEELS

The Auburn Wheel and Manufacturing Company, a corporation, has been organized at Providence, R. I., for the purpose of manufacturing automobile wheels, trimmings and bodies. The incorporators are George Wilkinson and Fred Edgeworth, both of Providence, and Bernard F. Egan, of Cranston. The concern is capitalized at \$60,000.

### THE GOODRICH-DIAMOND CONSOLIDATION

An official statement was made public at Akron, Ohio, on May 15, to the effect that a merger had been made between the Goodrich and Diamond tire interests. The statement follows:

"Messrs. Goldman, Sachs & Co. announce for themselves and Messrs. Lehman Bros., New York City, and Kleinwort Sons & Co., London, that arrangements have been completed for the purchase by the B. F. Goodrich Co. (New York) and the transfer to it of the property and business of the Diamond Rubber Co. The companies, as is well known, occupy premises in the city of Akron, Ohio, and are two of the half-dozen largest and most successful concerns of the kind in the United States, each manufacturing a great variety of rubber goods, including automobile tires. The consideration to be paid by the Goodrich Company is to consist of \$15,000,000 of the 7 per cent. cumulative preferred stock and \$30,000,000 of the common stock of the B. F. Goodrich Co. For the purpose of enabling it to carry out the transaction the B. F. Goodrich Company will immediately call a meeting of its stockholders for the purpose of authorizing an increase of its capital stock by the issuance of an additional \$15,000,000 of the preferred stock and an additional \$30,000,000 of common stock.

"When the increase of stock shall have been effected, the capital of the B. F. Goodrich Co. will consist of \$30,000,000 of 7 per cent. cumulative preferred stock and \$60,000,000 of common stock. Messrs. Goldman, Sachs & Co. and Lehman Bros., New York City, and Messrs. Kleinwort Sons & Co., London, have agreed to purchase from the Diamond Rubber Co. a large block of the stock of the B. F. Goodrich Co., which, together with the previous purchase of stock made at the time of the organization of the present B. F. Goodrich Co., will comprise about one-half of the entire issue of the preferred stock of the latter company and a considerable amount of the common stock as well.

"It is expected that in consequence of the acquisition of this interest by the banking houses named and the distribution of a portion of their stock among their clients a very much broader market for the securities of the B. F. Goodrich Co. will exist in the future than has ever existed for the securities of either of the old B. F. Goodrich Co. or of the Diamond Rubber Co. Stockholders of the Diamond Rubber Co., upon the distribution of its assets, will receive a considerable amount of cash in addition to their several shares in the stock of the B. F. Goodrich Co., preferred and common. The Goodrich Company will retain the executive staff of the Diamond Rubber Co. in addition to its present staff, and it is not expected that any radical change in organization or operating conditions will occur."

B. G. Work, who is to be president of the new company and who gave the statement here reproduced, added: "We want it understood that we do not contemplate buying any other companies as has been rumored."

### POWER VEHICLES IN GERMANY

On January 1, 1912, there were counted in Germany 70,006 power vehicles, 63,162 of which served for passenger and 6,844 for freight transportation. The increase, compared with the preceding year, was 12,201 vehicles, or 21.1 per cent. Of the passenger power vehicles, 23,350, or 37 per cent., were pleasure and sport vehicles, 22,942, or 36.3 per cent., served business purposes, and 7,084 were described as professional (in use by doctors, surveyors, etc.). There were also 5,262, or 8.3 per cent., of power-operated cabs and omnibuses, an increase of 1,000 in one year.

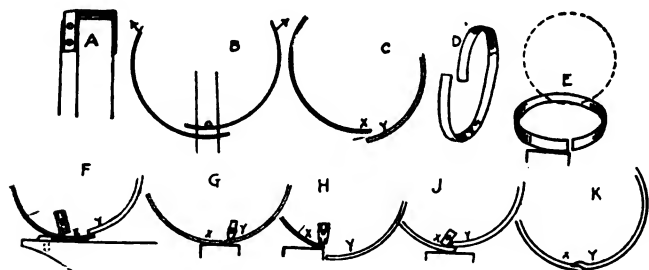
Sulphur is one of the best things for a heated bearing, and is often used at sea on engine guides and crank pins. It is best used in a powdered form mixed with oil.

# Smith Shop.

## HOW TO WELD TIRES

First have a post set in the ground or floor, as at A, extending  $2\frac{1}{2}$  feet above the ground and slope the top towards the back. Plate the top and put on a heavy clevis with an opening large enough for your tire to slip in. Slip in just enough to catch and push down on the tire. This bends the end so that it will go into the bender. If your tire happens to be bent together considerably, put under a pin which is driven into the anvil block or any other solid position, the smith and helper pulling in opposite directions. If the tire is not so close together, set the tire on the floor and open the end up, lift up and bring it on the floor. It will spring apart very easily. Be careful, however, not to spread it too far apart, as it will require extra work to bring it together again. This can be done by striking the tire where it most needs it. If the ends do not meet, raise your tire and drop it edgewise on the anvil, keeping it on a level with the anvil. This will cause it to spring over easily. This also has a tendency to spring the tire apart.

Now measure your tire and mark it three-eighths of an inch shorter than the wheel, and spring end X under end Y and place in the fire. Just before reaching the welding heat, remove the tire from the fire and with the assistance of a helper drive the two ends apart with a hot chisel. Then scarf X with same heat by tilting the tire towards the helper and driving straight down with a heavy hand hammer. If the end X does



How to Weld Tires Easily, Quickly and Soundly

not lay tight against Y, drive it tight with the hammer. Now note the difference between this lap and the old method of scarfing both ends on the inside: You will note that the lap at K leaves your weld to make higher on the inside than your tire is at each side, which is also lighter. The reason for burning off the edges on each side the weld is to get a good weld in one heat, clean and burn all the charcoal your forge will hold, wet it down well, and you are able to weld several tires before burning any more coal. Use no green coal in the fire whatever. Place the tire in the fire, keeping lap well to your side of fire. Heat not too fast, shifting the tire to bring the heat in the proper place, which practice will help you determine. Use for a flux yellow molder's sand and scales from the bender, mixing it half and half. Use plenty of it. When the tire is getting too hot on the edges, slow down and let the center come up. This helps to keep it from burning. Weld up and swedge the edges. With a little practice one heat is all you need to make on a tire.

To lift and handle a tire easily from anvil to forge and back, place the left hand on the tire just above the head and with right hand reach over through the tire instead of under, pulling the tire over the left thigh and you will discover that you have the tire on a balance right in your hands.—American Blacksmith.

## COLD TIRE SETTING

It seems that there is a hatred against cold tire setting and that the method used does not take well. I have a cold tire setter and have had it for about three years, and when I use it for what it is intended for it does good work, says A. J. Yeager, in American Blacksmith, but when a man thinks that he can set all kinds of tires and set wheels in all the conditions that we get them, why it is simply out of the question to do so. The cold tire setter is an adjunct to the trade for advancement, the same as a lot of other machines that have been added for the benefit of the blacksmith. Perhaps quite a number of the old timers will remember the old bench drill machine with a hand-made drill, and the old bellows with its leaky sides, and the old way of upsetting tires by kinking them up over the horn of the anvil and placing them onto an old rasp and have the helper hold down one end and the smith the other end, and using the hammer to drive down the kinked part to upset it. I have set many a tire that way, before I had a tire upsetter.

Then came the gasoline engine for cheap power, and the trip hammer and the up-to-date upright drill machine, with the nice twist drills to make holes just the size you needed them to make bolts fit snug. Then came the punch and shears to lighten the work of the smith, and nowadays you cannot find a good shop that is not equipped with these tools. Then came the emery wheels, and every man in the business that does any plow work is prepared to polish the lays that he sharpens, and in some places he has to harden them before polishing them so as to make them scour. All of this came about in the last thirty years, and the smith today is not the smith that he was thirty years ago. He does not have to do the forge work that he did then. Today when you hire a man to work in your shop for you and set him to make anything out of iron that requires any forging he says I never made a thing like that in my life, how do you do that? And if you want it made, it is up to you to show him how it is done or make it yourself. But when pay day comes he is there and wants as much money as if he really understood the business.

Now, the method of cold tire setting is all right when properly done, but bear in mind that the people who make the cold tire setting machines put no brains in them.

When a smith gets a cold tire setter and tries to use it without using his brains he is simply up against it. Of course he says it is no good and it will not do the work it is intended to do; and he advises the people through the journal that they had better not spend any money for a thing like that.

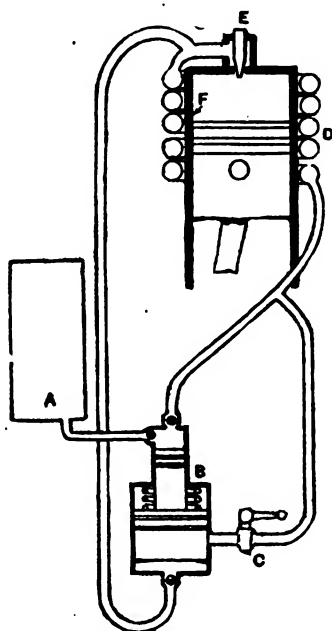
Now I will venture to say that out of every hundred that have cold tire setters there is perhaps one or two that find fault with the machines and want to see their name in print. The others simply read the kickers' articles and laugh about them and consider that they are too silly to be noticed. Some of these fellows say that they are from Missouri and have to be shown. That is the trouble with all of them in old Mo. Today we are after the money the same as any other line of business men, but the trouble is that a lot of us let some one tell us all about our business and what we should have for a job in a money way.

A receiver has been appointed for the Fitzgibbon & Crisp Carriage & Wagon Co., of Trenton, N. J., one of the oldest concerns of its kind in the state. It is charged that the company has liabilities amounting to \$44,040.66, and assets of \$28,170.

## USES GASOLINE IN "WATER JACKET"

No matter what form the internal combustion engine of the future may take, at present it is not possible to utilize all the heat that is generated. Gradually engineering practice is reducing this loss of heat. In respect to what eventually may be expected in the way of increased thermal efficiency, the Low engine is interesting.

The engine itself is not altogether unlike the now famous engine of Dr. Diesel, the thermal efficiency of which gradually has been brought up to the remarkable figure of 48 per cent., with a corresponding mechanical efficiency, in some cases as high as 35 per cent. of the heat value of the fuel. Like the Diesel, the Low engine shows notable thermal efficiency, exceptionally high mechanical efficiency resulting as a matter of course. It is said that an experimental two-cylinder V type engine having a bore and stroke of respectively 2 x 4 inches actually developed between 16 and 18 horsepower on the brake. By common proportion, allowing a fair percentage for friction, it becomes plain that an ordinary four-cylinder engine with a



bore and stroke of say, 4 x 5 inches, if its thermal efficiency corresponded to that of the Low engine, would develop in the neighborhood of 100 horsepower.

In principle the Low engine is quite similar to the Diesel engine in that only pure air is compressed. The similarity is carried still further in that fuel in the form of pure gasoline vapor is injected into the combustion space after the compression of the air is complete, though the similarity ends there. Far from doing away with sources of ignition other than that of the heat of compression, ignition in the Low engine is effected by a spark coil and plug and is continued during the whole of the working stroke, the theory being to effect as complete combustion as possible.

The most radical feature of the engine and the one on which it depends for operation and its remarkable efficiency, is that the ordinary water jacket is replaced by copper tubes which contain gasoline instead of water. In starting the engine an ordinary type of carburetor is used and the engine is run until a certain pre-determined heat is obtained, when the carburetor is disconnected and the other cycle of operations is taken up. What actually happens is that the gasoline in the outer tubes literally is boiled into vapor (gasoline boils at temperatures varying from 125 to 200 degrees, according to its specific gravity), and under its own pressure is injected into the combustion

space through a valve automatically operated by the piston. The explosive mixture so obtained then is fired by means of a spark plug and coil in the orthodox manner.

One of the peculiar features of the gasoline vapor valve is that by reason of its method of actuation, which at present is one of the dark secrets of the inventor, it opens very abruptly but closes comparatively slowly, the result being that vapor is injected for a considerable portion of the working stroke. The effect obtained is that the piston receives a steady thrust rather than an abrupt and intermittent series of blows, and consequently the torque diagram of the crankshaft shows appreciably flattened "peaks." The burned gases are exhausted in the usual way by means of a third valve.

Preignition is impossible, of course, for the simple reason that only pure air is compressed. This permits of exceptionally high compression pressures being used and is responsible in a measure for the unusual thermal efficiency of the engine. Perhaps the part of the engine which shows the greatest ingenuity on the part of the inventor is involved in the method of maintaining the supply of gasoline in the jackets. This is effected by means of a pump of the Worthington type which operates by the pressure of the gasoline vapor itself to inject fresh gasoline into the heating jackets after the manner of locomotive pumps which maintain the supply of water in the boiler by variations in the steam pressure. The pump, which is shown in the accompanying sketch, is of the differential piston type and operates against a spring. When the pressure in the gasoline vapor line drops, as when vapor is injected into the combustion space, the spring is permitted to expand and the lower end of the pump cylinder draws gasoline from the tank. As the pressure in the vapor line rises, due to the heat, the spring is compressed and the gasoline is injected into the jackets. The piston of the pump therefore "floats" while it reciprocates rapidly up and down, maintaining the supply of gasoline in the jackets.

In order to throttle the engine a valve controlling the supply of gasoline to the pump is provided, and this is interconnected with the air inlet valve in such a way that the cut-off regulates the supply of gasoline. Consequently, says *Motor World*, the quality of the explosive mixture remains constant at all times though the quantity may be replaced or increased according to the power requirements of the operator.

## FORD TO BUILD ASSEMBLING PLANT IN ST. LOUIS

A \$200,000 plant for assembling automobiles in St. Louis will be erected at Sarah street and Forest Park boulevard by the Ford Motor Co., of Detroit. The company has purchased for the new plant a site having a frontage of 150 feet on Forest Park boulevard and 345 feet on Sarah street. It also abuts the Wabash tracks, furnishing excellent transportation facilities.

W. C. Anderson, general manager of the Ford agency in St. Louis, said that the plant would have capacity for assembling 5,000 automobiles a year. All of the Ford automobiles sold in St. Louis and the Southwest will be assembled in St. Louis, he said.

The parts for the automobiles will be manufactured in Detroit. There is a big saving in freight by handling the automobiles in this manner, he said.

The new plant will be in operation by November 1, if plans are carried out, Anderson said. From 100 to 200 expert mechanics will be employed. Most of them will be brought to St. Louis from Detroit.

## TO ENLARGE WHITNEY PLANT

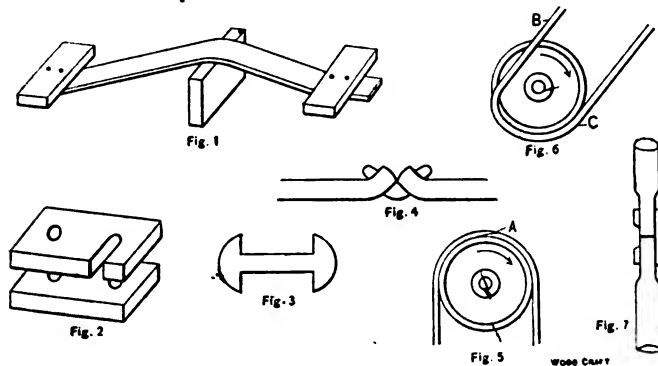
The plant of the F. A. Whitney Carriage Company at Leominster, Mass., will be restored to its proportions of two years ago, when a portion of the big mill building was destroyed by fire. The new building will be two stories high, of wood.

## How to Select and Manage Belts

I will explain how a belt can be put on so that it will be the correct length, drive properly, and never want touching for years. This is not a figure of speech.

Leather belting is most commonly used. A belt called "balata" is a fabric belt, coated on one side with a composition, and costs less than leather. Do not despise second-hand belting, if you can get it cheap, for if in good condition it is just as good as new, and will often drive better. To test it, fold it over double, and if no cracks appear on the outside of the fold, it is all right. There is also belting known as rawhide; it is suitable for high-speed spindles, and it will run over very small pulleys, as it is very soft and flexible; but it is rather expensive.

All belts should be thoroughly stretched before being put on, as, if not, they quickly elongate under the pull of driving and cease to drive. You can stretch a belt very thoroughly without any special tackle by the following simple means: Lay the belt flat on the floor, take two pieces of wood about an inch thick, drive nails—say,  $2\frac{1}{2}$ -inch wire—through them and the ends of the belt into the floor. See Fig. 1. Stand



### Sundry Methods of Satisfactorily Making the Most of Belting

astride the belt and pull the middle of it up from the floor, and you will be surprised how much you can stretch it by unaided muscular strength. Now wedge a piece of wood under the middle of the belt so as to raise it up from the floor. You need have no fear of breaking the belt, as the nails will pull out of the floor first.

Having the belt propped up in the middle by the piece of wood, stand on it (the belt) for a few seconds and you will find that you can get a longer piece of wood under it. You will be surprised how much you can stretch a belt, especially a new leather one.

Balata belt does not stretch as much as leather, but should be subjected to the process just the same, and also old or second-hand belts, as by lying by they shrink in length, and elongate under the pull of the drive. It is best, if possible, to do this stretching the day before you put the belt on, as you can then leave it all night under tension, and, in the case of a new leather belt, leave a weight on it—say, half a hundred weight for an inch belt and so on in proportion to the width.

The belt now being thoroughly stretched, all you have to do is to get the correct length, and make the joint properly, as I shall explain later, and you will find that it will drive properly, and give you no trouble for an almost indefinite time. If in spite of these precautions the belt gives trouble, slips, breaks, or the fastenings tear out, it is a sure sign that the pulleys are too small.

The makers of gas engines and electric motors sometimes send the machines out fitted with a pulley far too small. This necessitates too tight a belt, and a belt should never really be

tight; it should be easy to get on and off, and when running should have a visible sag on that side opposite to the driving side.

This rule applies to all belts, though it does not affect the proprietor of a small shop much as far as his main belt is concerned, because although he may have several machines driven by power, he only, as a rule, uses one at a time.

If a main belt gives trouble after it has been put on according to these directions, and it is as wide as the pulleys will allow, the only remedy is to increase their diameter—say 30 or 40 per cent., and of course the driving and driven pulleys must both be increased in the same proportion.

Having everything ready in the way of fasteners, etc., take the belt up off the floor and lay it over the pulleys. Pull the ends together as tightly as you can with your hands, and make a mark where one of the ends overlap the other. Have at hand a clamp or handscrew, or failing these, the little device shown at Fig. 2, and which is very handy for putting belts on with. It is simply two bits of wood and two bolts.

Now take the belt off of the pulleys and clamp the ends together an inch shorter than the mark. Replace it on the pulleys as if you were going to drive with it. The object of this is that if you are not used to handling belts, and judging the required amount of tension, you can now tell how the belt would feel when finally joined, and if it seems to be too tight or loose, you can make the required alteration.

The belt should be fairly tight, but not too tight—not like a harp-string that feels on the point of breaking. It should yield to a moderate pressure of the hand when applied to it between the pulleys. Having got the tension right as far as you can tell, make another mark where the end overlaps and cut off the superfluous piece.

As to fastenings, I have never found anything to beat Green's. (See Fig. 3.) I have used these for years, and on belts driving spindles running as high as 7,000 revolutions per minute. Lacing a belt is going out of fashion, and at best makes a somewhat clumsy joint, so I will not describe it.

Green's fasteners run from  $\frac{1}{2}$  inch between the ends (see Fig. 3) in the smallest size, then  $\frac{3}{4}$  inch,  $\frac{7}{8}$  inch and  $1\frac{1}{8}$  inch to larger sizes. The smallest size is rather thin and apt to cut the belt, and the second size,  $\frac{5}{8}$  inch long, is best for narrow belts. A flat belt under 1 inch wide is hardly practicable, and even 1 inch wide is best avoided if possible, as there is barely room for the fasteners, and if they are not carefully put in they are apt to tear out, although this should not happen if you follow my instructions.

I will describe joining an inch belt, as that requires the greatest amount of care. Cut the belt to the right length, and in doing so see that the ends are quite square with the side. Now, if you decide to use the  $\frac{5}{8}$ -inch fasteners, scribe a line  $\frac{3}{8}$  inch from each end of the belt, using a square and dividers, and not trusting to guess work.

Now mark with the dividers a line  $\frac{1}{4}$  inch from each side of the belt, and where these cross the other line drive a large-pointed bradawl through the belt, then take a chisel or a knife, and starting from the hole, elongate to  $\frac{1}{2}$  inch, then force a large screw driver into the slit to open it somewhat, so that you can get the fasteners in easily, as you must be careful not to bend them sideways, or twist them, as this causes them to cut the belt. Green's fasteners are stamped from sheet brass, and if you examine them you will see one side is rounded where it is forced through the die, and this side should always go against the belt. Having got the fasteners in, lay the belt on a piece of iron, and hit the joint a few hard taps with a hammer, and this will cause the fasteners to



bend, and the ends of the belt to butt together, as in Fig. 4. The reason for this care is that if the fasteners are properly put in each does its share of the work; but if not, one will soon pull out, and the others, even if there are several of them, will follow. Belts over 1½ inches wide should have three fasteners, and if the belt is thick they should be longer than for a thin belt.

Leather belts are made up of comparatively short pieces of hide sewn together, with what is known as a scarf joint, and it is usual in putting the belt on to see that the joint runs as in Fig. 5, with the thin end of the scarf A where it comes in contact with the pulleys, trailing and not going first. It is the usual practice, and I think it best to run a leather belt with the flesh side next to the pulley and the hair or smooth side outward.

A new belt will improve in driving power after it has been running a little time, as the surface of the leather gets smoothed down and gives better contact with the pulley. A belt should always feel clammy to the touch, and be pliable.

If a belt becomes hard and dry it will not drive properly, even if the pulleys are of the correct size, and it should have some oil, castor or neat's-foot rubbed into the hairy side. Dip a piece of rag in the oil, and do not apply too much at once, letting the belt absorb it well before giving it another coat. This treatment should be continued until the flesh side begins to feel just clammy, but not greasy.

If a belt becomes too greasy, as they will sometimes by being handled with oily hands or oil getting on them from the bearings, give it a bath of warm water in which a little soda has been dissolved.

Powdered rosin, etc., should be strictly avoided if possible, and only used in case of emergency. When a balata belt is new, the composition has a way of accumulating on the pulleys, causing the belt to run to one side, and sometimes to come off. This should be removed by scraping.

In choosing pulleys always select those that are slightly rounding on the top, or what is known as "crowning" in the trade, for a belt is always inclined to run on the highest part, which in this case is the middle. Pulleys that have no crown must have the axes of their shafts set perfectly parallel to each other, which is often difficult to do, and even then a belt will sometimes get a habit of running on the edge instead of the middle of the pulleys.

This is a tip about putting up shafting. All belts are apt at times to come off their pulleys owing to sudden overload or some other cause, so, either place a bearing or hanger so near to the pulley that if the belt comes off it cannot wedge itself between the two or else so that there is room for it to lie fairly on the shaft if it should come off.

In putting a belt on a running pulley, there is no danger if you handle it properly. Say you have a gas engine driving some shafting and you cannot start it without taking the belt off, and you have no loose pulley on the shaft. In this case you have to remove the belt and replace it while the engine is running.

We will suppose the driving pulley to be on the right-hand end of the crankshaft (viewing the engine from the cylinder end). In putting a belt on anything while in motion, you must always put it on the driven pulley first, and then on to the driving pulley. Never attempt to proceed the other way about except when throwing a running belt off, when you reverse the process, and with a piece of wood or a hammer handle applied to the edge of the belt where it comes on to the driving pulley, push it gradually to the outside until it comes off.

Having placed the belt on the driven pulley, take the other end and offer it up to the driving pulley, holding it with the left hand at B (Fig. 6), and pressing it firmly against the pulley at C with the palm of the right, keeping the fingers and thumb well out of the way, and not attempting to take hold of the belt with this hand, only pushing it against the pulley, the holding being done by the left hand.

If the belt is not unduly tight, as it should not be, the pulley

will soon begin to grip it, causing it to begin to move. Now let go with the left hand, keeping up the pressure on the right, and following the belt as it begins to move with the pulley, it will jump on to it.

As to round belts, I have long since discarded the gut belt and hook and eyes that screwed on, as I think they were the most troublesome bands ever made. For years I have used round leather belts fastened by a hook as shown at Fig. 7. Some screw the ordinary hook and eyes on the round leather belt; but I have found that the wire hook lasts so much longer and is so much easier to replace. I have used these for years on the spindles of small machines which ran at a very high speed, and where the screwed-on hook and eye would not have lasted half an hour.

These round leather bands run from 3/16 to 3/8 inch and can be got from most firms that sell belting. The 3/16-inch does very well for driving a very light lathe. For the larger sizes I do not use the fastenings that are sold, as I find that they are not stiff enough and pull open.

For the 3/8-inch belt I have made the hooks myself out of 1½-inch wire nails. If the joint is properly made a 3/8-inch belt will give a very powerful drive.

There is a little knack in making the joint. Place the band on the edge of the bench and give it a blow with a hammer to flatten the end slightly, then take a large bradawl with a pointed, not a chisel, end, and drive it through the belt. Do not bore a hole through the belt or remove any of the leather with a punch as this weakens it.

Do not make the hook too short; it should be at least 3/4 inch long for a 3/8-inch band, and do not make the holes too near the end of the band. They should be made so you can only just get the ends of the belt inside the hook, and when in their place they should butt hard together. If you observe this point the joint will last a long time; but if you make the holes too near the end of the belt they will soon pull out.

### IS THE MAGNETO FINAL?

There can be no doubt that the reply to such a question must of necessity be a negative one, for it would be quite impossible to classify any article where the fundamental principles of action are electrical as final.

The high-tension magneto since its inception has undergone many improvements and changes toward simplification.

It must be very obvious that engine manufacturers will not feel inclined to complicate engine construction and also increase the cost and weight by designing an engine with two separate driving gears, viz., that required to drive the magneto and that required to drive the dynamo, providing the two can be satisfactorily combined in one and driven by the same driving gear. And it must be equally obvious that the private user will not desire to multiply the possibilities of trouble by using two separate systems if he can rest absolutely safe with a combined machine. It is therefore to the combined machine that we must undoubtedly look for the next step in ignition and lighting.

At the present moment a machine is rapidly completing a thoroughly successful 5,000-mile final road test in England, after many months of exhaustive bench testing, which will revolutionize magneto ignition; this system is known as the Seebright.

It consists of a machine which is constructed on recognized high-tension magneto lines, but has superimposed armatures rotating between the same pole shoes, the lower of which is the standard type of high-tension armature, the upper being the armature generating current for the purpose of charging the accumulators for the lighting system.

### BIG WAGON AND BUGGY PLANT FOR ATLANTA

It is announced in the Atlanta Journal that the John Deere Plow Co. will erect a \$500,000 factory in Atlanta for the manufacture of wagons and buggies.

## HOW TO EXHIBIT AT ATLANTIC CITY

The Fortieth Annual Meeting of this Association will be held in Atlantic City, N. J., during the week commencing September 22, 1912.

At the same time and place the annual exhibition of parts of vehicles, automobiles, models, new inventions, harness, horse equipment and materials pertaining to the carriage, wagon, automobile and accessory industries, will be held.

For exhibition purposes, the committee has engaged Young's Million Dollar Pier, a large and well lighted inclosure that will accommodate all who wish to make an exhibit.

The following rules and regulations have been adopted to govern the exhibit:

Exhibitors must be either active or associate members of the Association.

The exhibits must be confined to models, parts of vehicles or automobiles, and to materials used in the construction of the same, or to coachmen's outfits, harness and horse furnishings. No finished vehicle will be admitted.

This exhibition is the members' own exhibition. They can take what space they may wish, from 8x8 feet to 20x100, or larger, if they desire, and as the exhibition is entirely for the benefit of the members, and as we never know their desire about the size of space they will need until the application is received, and also on account of the manner in which the space is sold—by mail only—it is impossible for us to make a diagram of the hall. For these reasons we cannot allow each one to choose his own location when making application for space. You can readily see, if we had a diagram, sent out by mail, several might choose the same location, and by so doing lead to endless confusion.

Therefore no definite location can be allotted to any exhibitor on receipt of application. The space will be allotted in the order applications are received, and arrangements can be made when installing exhibits to group industries that desire to be so treated. Those making early application to the secretary will secure what advantage in location there may be, and also avoid the delay in securing their space on the day of opening. As far as possible, ample room will be furnished to all.

Exhibits can be placed in position on Friday, September 20, and on Saturday, September 21, and the exhibits so placed must not be dismantled or removed from the exhibition inclosure, nor shall any hammering or unnecessary noise be made in preparation for removal until 6 o'clock p. m., on Thursday, September 26.

And this rule is ordered strictly enforced.

All exhibits can be removed on Friday, the 27th, and Saturday, the 28th, as the lease expires on this day.

The exhibition enclosure will be opened at 8 o'clock a. m., and remain open until 6 o'clock p. m., every day from Monday, the 23d, to Thursday, the 26th, except on Tuesday, September 24, on which day the inclosure will not be opened until 12 o'clock noon, and will be open all day Friday, the 27th, and Saturday, the 28th, for the removal of the exhibits, which must be removed on those days.

The space will be sold according to the following scale of prices:

8 x 8 feet—64 feet.....\$20	12 x 12 feet—144 feet.....\$45
8 x 12 feet—96 feet..... 30	12 x 16 feet—192 feet..... 60
8 x 16 feet—128 feet..... 40	12 x 20 feet—240 feet..... 75
8 x 20 feet—160 feet..... 50	12 x 25 feet—300 feet..... 90
8 x 24 feet—192 feet..... 60	12 x 30 feet—360 feet.....110
8 x 28 feet—224 feet..... 70	12 x 35 feet—420 feet.....125
8 x 32 feet—256 feet..... 80	20 x 20 feet—400 feet.....120
8 x 38 feet—304 feet..... 90	20 x 25 feet—500 feet.....150
8 x 42 feet—336 feet.....100	20 x 30 feet—600 feet.....180
8 x 46 feet—368 feet.....110	20 x 35 feet—700 feet.....210
8 x 50 feet—400 feet.....120	20 x 40 feet—800 feet.....240

The charge for larger space will be in the same ratio.

Exhibitors desiring specially arranged spaces, both as to

number of square feet and unusual dimensions, can be accommodated by early application to the secretary.

Floor space only will be sold. This may be furnished by the exhibitor with desk, chairs, tables, railing, etc., to suit his needs.

No booths will be permitted as part of an exhibit in the clear space of the inclosure if it shall obstruct vision by being enclosed or be objectionable because of the arrangement of signs that interfere with the rights of other exhibitors, whose protests will be accepted as final and binding on the exhibitor so offending.

The space allotted to any exhibitor must not be sublet to anyone not members of the Association. This rule is imperative.

No signs in the body of the inclosure shall be so displayed as to interfere with proper observance of community interest. It must be an implied agreement on the part of exhibitors when reserving space that the secretary or the superintendent shall be the sole and final judge of infractions of this regulation, and his decision shall stand.

Application for space should be made to the secretary now, and should state the nature of exhibits as well as the space required, and if on the side sections as hertofore set forth. As far as it is possible the space will be assigned in the numerical order of receipt of application. The sure and only method of securing the best location is to make early application.

We would suggest that goods sent for the exhibition should, if possible, be sent express prepaid. If forwarded by freight from distant points experience has demonstrated that there is no surety that goods will arrive when wanted unless they are shipped at least one week before the time the freight agent declares is ample time for the shipment. The freight should be prepaid if prompt delivery to the hall is expected after goods reach terminals.

Mark goods plainly and in more than one place on the package or crate, as directed below, and be very careful to also mark on the package the name of shipper also. This precaution aids the committee in identifying goods in owner's absence, aids quick installation on space ready for exhibitor, and prevents loss by reason of non-identification.

Mark as follows: "Carriage Builders' National Association Exhibition, Young's Million Dollar Pier, Atlantic City, N. J." and follow with consignor's name.

For bulky exhibits, too large to send by express, arrangements have been made with The Eldredge Express and Storage Warehouse Co., 110 N. South Carolina avenue, Atlantic City, to receive and transfer the articles intended for the exhibition from the freight station to the exhibition. Should you desire them to take charge of your goods we would advise you to notify them when goods are sent, the route, and if possible send them duplicate bill of lading.

HENRY C. McLEAR, Secretary,

Mount Vernon, N. Y.

By order of the Executive Committee of the Carriage Builders' National Association.

## OBTAIN FACTORY SITE AND INCREASE CAPITAL

The Henderson Motor Car Company, Indianapolis, Ind., manufacturers of the Henderson car, which made its initial appearance in Indianapolis on the day of the 500-mile race, has obtained a contract for a long time lease with the National Casket Company for the factory site belonging to the latter company on North West and Fourteenth streets. The company has also increased its capitalization from \$100,000 to \$200,000.

## C. D. FRANKE CO. TO BRANCH OUT

C. D. Franke & Co., Inc., of Charleston, S. C., have been issued a charter by the Secretary of State, with a capital stock of \$250,000, to do a general wagon, buggy and motor car business. The officers are Emil H. Jahnz, president; Julius H. Jahnz, vice-president and manager, and Hermann D. Lubs, secretary and treasurer.

## AMERICAN MOTOR-CARRIAGE DESIGN AS VIEWED ABROAD

"The American motor carriage is passing through a phase of its existence in which it is emanating from the grub stage and approaching that of the butterfly," says a writer in *The Motor*, a London publication, who continues as follows:

It is hardly possible to characterize the simile as exact, for the automobile is under constant use, developing from that use, while the insect goes to sleep, performs during the lethargic stage all that is useful in its existence, and then bursts forth upon the world in its beautiful form and perpetuates the existence of its type while adding one spot of brightness to an otherwise somewhat drab world.

The American auto, as first introduced, took after what they style on the other side as the "piano-box" buggy, and if there were four passengers the "surrey" of horse-vehicle days found its counterpart on the gasoline car. In the design of electric vehicles, however, there was a strongly marked tendency to seek inspiration for design in contemplation of the brougham and the cabriolet victoria of the 'nineties.

The American motor manufacturer has, as he would say, "cut all this," and gone in for designs which are a modification of European styles, combined with some American ideas and adapted to the particular methods of construction peculiar to the country. In the designs of open touring cars, which are shown in our American contemporaries as being the leading styles at the prices named, the American designer is at least three years behind his European compeer. Very few of the designs are British 1912, such as were to be seen at Olympia. The general style of the American open car is a high seat and low side and a cape hood with a great overhang. The greater average length of the wheelbase gives greater scope to the American motor carriage designer to bring his design and load within the wheelbase, and the great majority of the designs show that this particular point has received attention.

In regard to the disposal of the general impedimenta and the spare tires or wheel, the American designer is exactly where the British is—that is, he has made no special provision for them in the designs. The earlier designs of bodies were too cramped for room, and the latter ones, having followed the English fashion, have no room under the seats, and the tires, etc., are hung up on the rear and along the footboards.

The enclosed car has been developed along Continental lines, somewhat exaggerated in style. The carriage fashions were taken largely from Paris and Berlin, and the styles, as placed before their readers by the American journals, show to what an extent this has gone. It would be almost impossible to conceive any form of motor carriage which contained within its outline more challenges to æsthetic taste than do a dozen of their designs. Certainly one or two firms have pulled themselves up, and the heads of departments have made themselves acquainted with the styles of the best British and Parisian houses, greatly to the improvement of their cars. Some of the new designs for large carriages on six-cylinder chassis leave very little to be desired in the way of improvement. The enclosed front seat as a coupe is a much more pretentious carriage than with the majority of the British designs. It is difficult to see what object is being served by the perpetration of such designs as standard by the makers, certainly they may commend themselves on the score of novelty of treatment.

The two-seater runabout is a great favorite on the other side, and is in almost universal use, probably more than one-half of the motorcars in use in the States have fewer than five seats, the majority being only two-seated cars. In the two-seater the American has left entirely out of consideration all the forms of horse-drawn carriage with two seats which were so common, and has adopted whole-heartedly the European style of body, with a few characteristic native touches.

In these designs the sense of humor in the rest of mankind is challenged: large bonnets, low bodies and seats, raking steer-

ing pillars, large round gasoline tanks behind the seat, two tires piled up on the boot behind the tanks, and every appearance of the car being a perfect terror to other road users, if the driver only choose to let it out and have its way. Little bits of almost every conceivable shape which have done duty for an attraction on this side of the water, can be found embodied in these little cars. In these, as in the larger cars, the tire question and the disposal of the accessories are still unsolved. The tires are anywhere but out of sight, tool and other boxes are disposed on the stepboards, and generally there is an out-of-dateness about the appearance of these cars, illustrated as being the type for 1912, which is astonishing to the ordinary observer.

American design in motor-carriage work has a great tendency to run to seed. The prevailing habit of considering everything about the car in multiples of production has left entirely out of mind the fact that mankind—and in this case the ladies are included—judges of things largely by what is seen. When there is need for great uniformity in the construction of the hidden and unknown parts of an auto, the purchaser will be the more readily satisfied when assured that any part which may fail can be replaced without unreasonable delay and with the form and appearance of which he is not greatly concerned. He is apt to take a somewhat different view about the exterior and that portion of the car on which he is depending for his personal comfort. The minds of all men have not been produced by a factory process, and they will not long continue to be patient under a system of production which results in the offering of forms which cannot be altered or adapted to their individual tastes.

The manufacturer who has entered into a contract for a supply of bodies of one particular standard has to find that number of customers with the same mind which will accept these settled forms, and that is not a very easy process. The British method of building small numbers of one pattern enables the manufacturer to be free to look out for improvements in the design of the carriage work on the car. There are thousands of minds at work every day endeavoring to develop some small improvement for their personal advantage, and the sum of these improvements appears in the general trend of the designs produced by the manufacturers of a country. That is one of the main reasons why British design of motor-carriage work has stepped into the foremost place, the adaptability of the business, and the fact that it has not hampered itself with a large number of designs for which it has no immediate demand. The hands of all those interested are free to deal with the individual customer.

## THE BIRTH OF THE CARRIAGE

Always interesting to know something about the beginnings of things. And as harnessmen we have a right to be posted on the vehicles for which we make harness without which they would not amount to much.

Hungary has the credit for inventing and building what we know as the coach. The record commences with the magnificent coach given by the Hungarian King to Queen of Bohemia. (Wonder what the Hungarian Queen had to say about that!)

The word itself is traced to the village of Kotsee in the province of Wiesellung. In France the name became *caroch* (*carosse* today), in Italy it became *caroce*, and in Spain *caricoche*.

The people of quality had the first shot at the good things always, so in England we find that the first coach was built by Walter Rippon for the Earl of Rutland. After this he built one for Queen Mary as a kind of second choice.

The first account of an open coach that we can find is the one presented to Queen Elizabeth by a Hollander named Boonen, along about the seventh year of the reign of the so-called Virgin Queen. Bess was a vain old dame so this coach was just the thing for showing herself off on occasions

of ceremony, and we may be well assured that the Dutchman Boonen well knew what he was about, and probably some juicy trade concessions came his way.

It was not until the end of the sixteenth century that people of means generally had the coach habit. Not until 1610 did the frugal Scotchman think it worth while to invest a groat in such a piece of vanity as a coach. At this time one was established to run between Leith and Edinburgh. But it was regarded as so dangerous to make the journey by means of the coach that it was common for the intending passenger to make his will and part from his family as if probably for the last time. Taylor was so disgusted with the novel article that he named them "Hell-carts." Taylor was a poet, much addicted to the waterside and boating, and he did not think well of vehicles, anyhow.

But the grandparent of the coach and all four-wheelers was the litter. This means of "toting" people about was responsible for the court carriage, which became very sumptuous after its fashion in the Latin countries especially. Italy led in this regard, being naturally artistic, but the roads in those days were so entirely infernal that to ride a distance in one of these conveyances, the carriages had to be fitted with iron rods called pommels, to let the riders hold on with some small degree of safety as the vehicle negotiated the awful ruts in the roads. The harnessman will notice that the word pommel with which he is familiar as a part of a saddle, came by its name owing to its use in the coach. The man on horseback used it for the same purpose in keeping in the saddle seat.

France did not take kindly to the ceremonial carriage for a long time, preferring to go on horseback, and it was for some years that the king of that country alone used the vehicle, the nobles and ladies taking to the horseback mode of progression by preference. But by the seventeenth century the people of all classes that had the price used the coach or carriage, so it may be seen that it is not so very long ago that people got about very comfortably.—Imp. and Vehicle Record.

### MOTOR CONCERNS IN \$330,000 FIGHT

Involving about \$330,000 and likely to occupy the attention of the court for six weeks, a suit was started June 3 in Detroit. It is brought by the Owen Motor Car Co. against the Reo Motor Truck Co.

The Reo Company bought out the Detroit concern in October, 1910, the agreement being that the Reo Company was to buy all the plant of the Owen concern for \$100,000, to be paid for in capital stock of the Reo Company at par value. They were to continue the manufacture of the Owen car and pay the receipts after deducting 10 per cent. to the Owen Company, until the latter had paid all its obligations. In the meantime the stock was to be held in the bank as escrow.

The Owen Motor Co. now alleges that the Reo Company has not continued the manufacture of the Owen car, according to its agreement, and has not paid it the profits that should come to it. The Reo Company says it manufactured a lot of Owen cars, but was unable to dispose of them, even with its high-priced selling staff. In return for an outlay of \$30,000 in advertising, all it got was the sale of 30 cars.

### FILE BANKRUPTCY PETITIONS

A bankruptcy petition was filed in the courts at Creston, Ia., May 16, against W. W. McCullough, an implement and carriage dealer, by manufacturers from Dallas, Ill., Kansas City, Mo., and South Bend, Ind. It is not yet known whether Mr. McCullough has assets sufficient to meet the liabilities or not.

Gustave Prenkshat, a wagon builder of 850 Lexington avenue, Brooklyn, N. Y., filed a voluntary petition in bankruptcy June 3. He stated his liabilities as \$2,159.73 and his assets as \$853.75.

### CANADIAN REGULATIONS FOR MOTOR TOURING

As a large number of Americans with automobiles tour this part of Canada every season, the substance of the principal regulations for the province of Ontario is presented:

1. The driver must be at least 18 years of age, and in no way intoxicated.

2. Any person operating an automobile for gain or hire must be licensed to do so; and no person may employ another for that purpose unless so licensed.

3. No automobile is allowed on the public highway unless provided with a provincial license and number, which costs \$4 per calendar year.

4. At all Canadian ports of entry will be found a customhouse broker who provides foreign tourists with auto licenses. Ordinarily this broker is the representative of a bonding company, and will bond cars against interference by the customs for six months, for which the deposit is \$10. The tourist is given a copy of this bond, and upon finally returning out of the country, he should have the customs at outgoing port certify that fact upon the copy. This copy should then be sent to the issuing broker, who sends the release of bond obligation and \$5, keeping the other \$5 for his services.

5. The auto must be provided with a gong or horn and suitable lamps.

6. No other number than that of the provincial license may be exposed, and must be kept clear and plainly visible. No searchlights are permitted.

7. The maximum speed within city limits is 15 miles per hour; in country, 20 miles. But drivers are enjoined to slow down whenever the exigencies require it. Upon passing a team, slow down to 7 miles; and when going in same direction sound the gong and give driver an opportunity to turn aside. Upon meeting a funeral, turn aside as much as possible and stop until it has passed.

8. If an accident occurs to any person on foot, horseback, or in a vehicle, owing to the presence of the automobile, the person in charge thereof must go back to the scene of the accident and give in writing to the person sustaining loss or injury the name and address of the owner of the motor vehicle and number of license.

9. In case of injury or damage the onus of proof that the same did not arise through the negligence of the driver of the automobile rests upon the owner or driver thereof.

10. Violations of any of these regulations are punishable by fine or imprisonment, or both. Any police officer may in good faith make arrests without a warrant; and "every person may arrest without a warrant any person whom he finds committing any such offense" above referred to.

### BIG TRUCK CO. LEAVES DETROIT FOR MILWAUKEE

The Universal Motor Truck Company, capitalized at \$1,000,000 and employing between 2,000 and 3,000 men, will remove its plant from Detroit to Milwaukee.

It was recently organized by the merging of the interests of Walter E. Flanders and the Metzger Motor Car Company, Detroit.

It is understood that the Schlitz Brewing Company, large stockholders in the concern, was instrumental in bringing the company to Milwaukee. The Universal Company has brought together all the men instrumental in organizing the E. M. F. Company, including Mr. Flanders, William E. Metzger and B. F. Everitt.

The new company will be recapitalized for \$3,000,000 and will probably be headed by B. F. Everitt as president; Paul Smith, vice-president and sales manager; William E. Metzger, secretary; Walter E. Flanders, general manager; Wallace Hood, sales manager, and Harry Bill, factory manager.

## CLEVELAND WANTS CONVENTION

Cleveland, O., is making a strong effort to secure the 1912 convention of the National Implement and Vehicle Association. The movement has the enthusiastic support of leading business men, including twenty or more concerns interested in the implement trade through their large dealings with manufacturers in that line.

The men behind this proposition report that they have received satisfactory encouragement from leading members of the association. It is understood that the matter will be determined by the executive committee after consultation with the members of the organization. The convention will be held during either the third or the fourth week of October.

## MOTOR COMPANY ORGANIZES AT DAYTON

The organization of the Veitch Motor Manufacturing Company has just been effected at Dayton, O., with a capital of \$200,000 for the manufacture of motor parts, and a tract containing four and one-half acres has been acquired in Edgemont on which a large factory will be erected, construction work to begin at once. Temporary quarters were established in the Beaver Power Building. Four hundred workmen will be employed.

## SHORTAGE OF WAGON STOCK

The wagon manufacturing division of the National Implement and Vehicle Association held a meeting in Chicago, June 6, called for the purpose of discussing the situation as to the supply of wood stock and laying plans for protecting themselves and their customers. An advance in prices for 1913 is apparent.

Secretary McCullough issued the following statement of the situation:

The farm wagon department of the National Implement and Vehicle Association met in the Chicago office of that organization June 6. Concerns producing approximately 75 per cent. of the farm wagon output of the country were represented. Conditions in their line seemed to have made it imperative to hold such a meeting, and all phases of the situation concerning the materials, manufacture and selling were considered.

While it seems proverbial that such meetings as this heretofore have generally resulted in a showing of facts which impelled the manufacturers to advance their prices, such will not be the immediate result of this meeting, for while undoubtedly the present selling prices obtained by manufacturers, jobbers and retailers of farm wagons do not pay a fair profit on the investment, the most serious consideration given at this meeting was to the problems confronting them as to their supply of wood materials.

The farm wagon is the most important of farm equipment lines which has not changed in material requirements during this age of iron and steel, consequently every change affecting the cutting and manufacture of hardwoods is of serious importance to the wagon manufacturer. Owing to the severity of the past winter and the floods which followed in the spring, a very large portion of the timber country has been under water for several months, and much of it will not be in condition to log for some time to come. The stock of materials at the mills this winter were small, and as the wagon manufacturer must replace this dry stock as he uses it with green to season, the predicament he finds himself in at this time is readily understood.

The farm wagon trade for several years has been less than normal, yet the wearing out process as to the wagons in use has been going on, and with good crops this present year, it is not at all improbable that difficulty will be experienced in securing prompt shipments, for the stocks in the hands of the retailers, generally speaking, throughout the country are smaller than for many years. It is not unlikely that many manufacturers will be forced, at no distant date, to advance their

prices, in fact, there is little question but that this fall will see the limit of wagons at present prices and next year much higher ones.

This information is not given to stimulate the early placing of orders by the retail dealer, but simply to acquaint him with these conditions in manufacturing, which will be valuable for him to know in gauging his requirements and placing of his orders, whether he determines to do it early or late. The indifference shown by the dealer at times toward this very necessary transportation vehicle, gained undoubtedly from the impression prevalent a few years ago that there was no profit to be made in wagons is fast passing, for it is being realized that almost every pound or bushel of crop must be hauled some distance in a vehicle of this kind, and as it is an absolute necessity to farm equipment and a legitimate item in the stock of an implement and vehicle dealer. The most progressive dealers have been readjusting the situation in their localities by figuring their costs of doing business and adding to the price of the wagon in addition to their costs a fair margin of profit.

The life of a farm wagon as now constructed is three times as great as it was twenty years ago, but its cost to the consumer has not increased generally speaking 25 per cent. in the same period, notwithstanding the vast increase in the cost of production. From point of service and durability there is no item in the equipment of a farm which costs less, and no real merchant should hesitate to sell his wagons at a profitable price, nor should he make any apologies for so doing.

## CHALMERS DECLARES 2½ PER CENT. DIVIDEND

The Chalmers Motor Co., of Detroit, has declared a dividend of 2½ per cent. on its capital stock of \$3,000,000. The distribution is equivalent to a semi-annual dividend, being the third payment since January, 1911. In his report to the stockholders, President Chalmers, among other things, remarked that "for the fiscal year, the company's business shows an increase of 43 per cent."

## TWO OHIO TRUCK MAKERS CONSOLIDATE

The Cleveland Motor Truck Co., of Cleveland, Ohio, and the Howard Automobile Co., of Galion, both manufacturers of trucks on a limited scale, have amalgamated under the name of the Cleveland-Galion Truck Co., capitalized at \$500,000. Harry W. Woodward, president of the Cleveland company, is the head of the new corporation, which will retain offices in Cleveland and perform its operations in Galion.

## INTERESTING LEGAL QUESTION

T. F. Stroud, whose factory in Omaha was destroyed by fire recently, has sued the Omaha water company for \$89,000, alleging that the water pressure was deficient, not being up to the requirements of the contract of the water company with the city, and that the total destruction of the Stroud factory was the direct consequence. If the suit is won on this contention, a unique precedent in such matters will have been established.

## GOODRICH REDUCES OHIO CAPITALIZATION

Having transferred its corporate existence from Ohio to New York, the B. F. Goodrich Co. has reduced its capital stock in the former state from \$20,000,000 to \$200,000. The New York corporation, as already is generally known, is capitalized at \$45,000,000, which amount, in view of the Goodrich Company's recent purchase of the Diamond Rubber Co., shortly will be increased to \$90,000,000.



# Trade News From Near and Far

## BUSINESS CHANGES

Hurd & Henry are about to open a buggy store in Creston, Ia.  
J. C. McLachlin has purchased the stock of buggies, etc., of J. H. Eid, in Neche, N. D.

E. E. Sherman has purchased the Davis Company stock of vehicles in Elk Point, S. D.

John Brennan has purchased the stock of vehicles, etc., in Burr, Neb., from R. W. Fiske.

M. J. Griffin has purchased the buggy and implement business of Kelch Bros., in Sac City, Ia.

J. M. Bukacek has purchased the stock of carriages, etc., of Filipi & Indra, in Clarkson, Neb.

Pouch Bros. have purchased the stock of buggies, etc., of John H. Tamm, in Denison, Ia.

F. H. Ainsworth has succeeded to the vehicle business of G. D. Cheatham, in Aurora, S. D.

The Golden Eagle Buggy Co. has purchased the plant of the Atlanta Buggy Co., in Atlanta, Ga.

F. M. Luther & Sons have sold their stock of buggies, etc., in Durham, Kas., to J. K. Loewen.

J. L. Brown has been succeeded in the vehicle business in Runge, Texas, by Harvey Mitchell.

J. A. Suefurer has disposed of his stock of buggies, etc., in Newburn, Ia., to Snuggs & Snuggs.

H. A. Hemming has disposed of his stock of vehicles in Wheaton, Minn., to O. S. Hokanson.

J. G. Rosencrans has purchased the stock of vehicles of H. L. Howell, in Waynesfield, Ohio.

J. H. Jacobson & Son have purchased the business of the late John Peterson, in Stephen, Minn.

Idso & Anderson have succeeded to the business of the Anderson-Erickson Co., in Randall, Ia.

Wm. Jahde has purchased the hardware and buggy business of F. R. Smith & Co., in Pender, Neb.

C. E. McMichael has disposed of his stock of vehicles, etc., in Republic City, Kas., to W. L. Davis.

Al. G. Wright has purchased the stock of vehicles, etc., of Vaughan & Colclazier, in Anthony, Kas.

C. A. Johnson & Co. have been succeeded in business in Belmond, Ia., by Johnson & Holtzbauer.

Eugene Renaud has succeeded to the stock of vehicles, etc., of Geerstma & Renaud, in Lynnvill, Ia.

James H. Eaton has purchased the interest of R. L. Pratt in the Pratt Auto Co., in Syracuse, Neb.

Morton & Parker have sold out their vehicle and implement business in Wynot, Neb., to A. T. Warren.

L. F. Steiner & Co. have incorporated their vehicle business in Louisville, Ky., with a capital stock of \$3,000.

The Woodward Co. purchased the vehicle stock of Frank Reedy, at Fresno, Cal., and disposed of it at a special sale. Reedy will continue in business at the same stand in the harness line and manufacturing auto tops and trimmings.

## NEW FIRMS AND INCORPORATIONS

Hencke & Haas have opened a new stock of vehicles, etc., in Preston, Ia.

Joseph & Christensen have opened a stock of vehicles, etc., in Toledo, Ohio.

Fred Biedinger has just opened a new stock of buggies, etc., in Madison, Neb.

Baldwin & Whittier have opened a stock of vehicles and implements in Cothenburg, Neb.

The Panama Mfg. Co. is being organized in Malvern, Ark., to manufacture dump wagons, etc.

Howard & Rihardson have just established themselves in the carriage and implement business in Ravenna, Neb.

The Marshalltown Buggy Co., of Marshalltown, Ia., is planning the establishment of a branch plant in Austin, Texas.

Pixley & Sutherland have established themselves in the implement business in Bear River, Minn., and carry a big line of vehicles.

## IMPROVEMENTS AND EXTENSIONS

The Lull Carriage Co. is building an addition to its plant at Kalamazoo, Mich.

The West Coast Wagon Co., Tacoma, Wash., will erect a three-story addition to its plant.

Gibson & Miller are building a new room to their big store, in Americus, Kas., to accommodate their carriage and implement stock.

M. Weber will put up a \$10,000 wagon and shop building at St. Clair and Monument avenues, Dayton, O. It will be three stories high.

John Raymer, Reardon, Wash., is erecting a brick store building, one department of which will be devoted to the automobile business and another for horse-drawn vehicles.

T. F. Stroud & Co., makers of the "little red wagon" and other dirt-moving machinery, at Omaha, Neb., have rebuilt their plant burned out recently. They have 450 feet of shop under roof, twice the width of the shop destroyed.

## NEWS OF THE AUTOMOBILE TRADE

Swan Bros. are about to establish a new garage in Clay Center, Neb.

The Commercial Motor Co., capital \$10,000, has been incorporated at Louisville, Ky.

L. B. Nicholson is about to engage in the automobile business in Pawnee City, Neb.

Guy Sherman, of Tecumseh, has engaged in the automobile business in Cambridge, Neb.

The Richmond (Mich.) Auto Co. has engaged in business with a capital stock of \$5,000.

Overland Automobile Co., Indianapolis, Ind., decreased its capital from \$1,525,000 to \$1,500.

The Mitchell Auto Sales Co. has been incorporated in Tampa, Fla., with a capital stock of \$15,000.

The Hercules Truck Co. has been incorporated in Alexandria, Va., with a capital stock of \$100,000.

The Hartford (Ky.) Automobile & Supply Co. has been incorporated with a capital stock of \$1,000.

The Herreshoff Motor Co., of Detroit, Mich., has increased its capital stock from \$230,000 to \$430,000.

The E. B. Lyon Motor Car Co. is about to erect a garage, showroom and workshop in Durham, N. C.

The Bainbridge (Ga.) Auto & Construction Co. has been incorporated with a capital stock of \$50,000.

The Monticello Automobile Co. has been incorporated in Norfolk, Va., with a capital stock of \$15,000.

The Twyford Auto Mfg. Co., of South Houston, Texas, has let the contract for a \$20,000 factory building.

The Hershoff Motor Car Co. has been incorporated in Houston, Texas, with a capital stock of \$5,000.

The Ohio Motor Car Sales Company, Cincinnati, O., capital

\$100,000, has been incorporated by C. F. Pratt, A. E. Schafer, H. T. Boulden, Jasper E. Brady, S. C. Roettinger.

Smart Auto & Mfg. Co. has been incorporated at Indianapolis, Ind., with a capital of \$50,000 by O. S. Srader, D. W. Red, F. W. McCredue, O. E. Cummings, Brinay Smart, I. H. Shelton.

The Michigan Motor Co., capital \$50,000, has been incorporated at Boston with W. E. Burke as president.

The Pennsylvania Automobile Co. has been incorporated in St. Louis, Mo., with a capital stock of \$10,000.

H. W. Meir has disposed of his hardware business in Long Grove, Ia., but continues to handle automobiles.

The G. J. Merchant Automobile Co. has been incorporated in Lynchburg, Va., with a capital stock of \$5,000.

San Marcos (Tex.) Auto Company, capital \$2,000, has been incorporated by Frank Bradley and C. L. Hopkins.

The Ideal Commercial Car Co. has been incorporated at Akron, O., capital \$200,000, by H. G. Gates and others.

The Automatic Starter Co. has been incorporated at St. Louis, Mo., capital \$50,000 by John J. Cochran and others.

The Stanley Automobile Co., capital \$2,000, dealers, has been incorporated at Louisville, Ky., by E. C. Walker and others.

The Eisemann Automobile Co. has been incorporated at Cleveland, O., with a capital of \$10,000, by Sidney M. Weitz.

Marion Motor Car Co., Indianapolis, Ind., increased its capital from \$100,000 to \$1,125,000. It takes over the Marion Sales Co.

The Spencer-Wilkie Motor Car Co., Morristown, N. J., capital \$30,000, has been incorporated by C. P. Spencer, Wm. W. Wilkie.

The Big Four Auto Co., capital \$3,000, has been incorporated at Huntington, Ind., by Daniel and Lewis Shinkel, and William Richardson.

W. T. Hoberg, of Nebraska City, and J. O. Kornder, of Armour, S. D., will engage in the automobile business in Hebron, Neb.

The Detroiter-Baltimore Co. has been incorporated at Baltimore, Md., capital \$50,000, to manufacture autos, by R. H. Cuxton and others.

The Oklahoma Motor Truck Company has been incorporated at Tulsa, capital \$10,000, by P. E. Haworth, P. W. Herman and I. Spencer Cox.

The Randolph Motor Truck Co., of Delaware, a Delaware corporation, capital \$100,000, has been incorporated at Chicago by J. M. Lipson, 105 W. Monroe street.

## FIRES

The Washington Carriage Co., Spokane, Wash., was damaged by fire May 15.

The Grabowsky Power Wagon Co., Cleveland, O., sustained a \$10,000 fire loss May 27.

The stock of buggies, etc., of Byers Brothers, in Beatrice, Neb., has been destroyed by fire.

The Lion Motor Car Co.'s plant at Adrian, Mich., was destroyed by fire June 2; loss \$350,000.

Hardy Buggy Company's plant at Paducah, Ky., was struck by lightning and destroyed by fire May 24; loss estimated at \$40,000; partially insured.

The Emerson-Brantingham Company suffered a total fire loss at Des Moines, Ia. During the heavy rain storm of May 10 the building was struck by lightning and before the firemen could get any control of the fire it was practically a total loss and the stock was entirely ruined.

Fire destroyed the large warehouse of the F. A. Ames Carriage Company on the Texas Railroad, at Owensboro, Ky., on June 5. The warehouse was filled with buggies, carriages and stock of all descriptions, and the loss will run into the thousands. The factory was covered by insurance.

## PERSONAL MENTION

F. H. Pettit has obtained a position as sales manager for the West Coast Wagon Company, Tacoma, Wash., and will direct the selling force over the entire state. He is also a director in the company.

The Brantford Carriage Company, Brantford, Ont., has been reorganized with John Sanderson as president, and T. H. Whitehead, vice-president. It is reported that the company will build a \$50,000 addition.

George B. Lourie, for the past seven years secretary and treasurer of the Racine-Sattley Company, at Racine, Wis., but who tendered his resignation some months ago, to take effect on June 1, has been appointed general sales manager of the Peru Plow & Wheel Company, with headquarters at Peru, Ill.

F. G. Letts, who was formerly sales manager of the W. A. Paterson Co., Flint, Mich., resigned on June 1 and his place is now filled by Chas. H. Pier, who has been with the company for the past fifteen years, and who during the past six years has represented them in the state of Indiana as traveling representative.

At the annual meeting of the Kentucky Wagon Manufacturing Company, of Louisville, Ky., C. G. Strater and B. Bernheim were elected directors to succeed A. L. Schmidt and W. S. Speed. Directors reelected were: W. C. Nones, S. M. Nones, John Marshall, John C. Hughes, James Glazebrook, Lafon Allen and P. S. Tuley. President Nones informed the stockholders that the business outlook is the best in several years.

## DEATH OF PIONEER BODY BUILDER

George W. Moore, 63, president of the Moore & Munger Co., of New York, manufacturers of automobile bodies, died of pneumonia on May 24, at his home in New York City. Mr. Moore was a pioneer in the high grade automobile body industry.

## DEATH OF WIDOW OF D. M. SECHLER

Mrs. Pamela M. Sechler, widow of the late Daniel M. Sechler, founder of the D. M. Sechler Implement and Carriage Co., Moline, Ill., passed away on May 7, at her home, 2260 Park avenue, Cincinnati, Ohio. She had reached the age of ninety-three years, but was active until about three weeks before her death, when she was stricken with paralysis, resulting in her death.

## WILL BUILD "HAND MADE" WAGONS

"John Welshans, who has been Warwood's 'village blacksmith' for the past several years, will in a short time," says the Wheeling Intelligencer, "begin making plans for the erection of a large wagon works. A number of expert workmen will be employed, and only strictly hand-made wagons will be turned out. It appears that there has been a constant demand for the past several years for the old-time hand-made wagons all over the country, as they are, according to farmers, cheaper in the long run than those made by machinery."

## REORGANIZATION OF GRAMM CO.

B. A. Gramm, having resigned the vice-presidency of the Gramm Motor Truck Co., of Lima, Ohio, control of which recently was acquired by John N. Willys, of the Willys-Overland Co., George W. Bennett, vice-president of the latter company, was elected to fill the vacancy at the meeting of the directors on May 23. The other officers as permanently chosen are as follows: President and general manager, John N. Willys; secretary, James E. Kepperley; treasurer, Walter Stewart; assistant general manager and factory manager, Harvey L. Hooke.

# Recently Granted Vehicle Patents

- 1,012,796—Vehicle wheel. John N. Bartle, Wichita Falls, Tex.  
 1,012,985—Wagon brake. John Y. Clack, Red Bay, Ala.  
 1,012,620—Motor vehicle. Henry Ford, Detroit, Mich.  
 1,013,011—Wheel rim. Henry J. Graves, Kensington, London, England.  
 1,012,847—Motor driven steering axle for motor vehicles. Charles B. Hatfield and C. B. Hatfield, Jr., Cornwall-on-the-Hudson, N. Y.  
 1,012,666—Wagon. Santford Little, Fairmont, Ind.  
 1,012,670—Wind shield for motor vehicles. Allen Loomis, assignor, by mesne assignments, to Packard Motor Car Company, Detroit, Mich.  
 1,012,879—Gripping device for securing auxiliary or spare rims to automobile wheels. Albert Manson, Paris, France.  
 1,013,035—Wagon end-gate. Charles C. McColley, Rocky Ford, Colo.  
 1,012,855—Spoke-mitering machine. Andrew A. McLaughlin, E. S. Mills and H. B. Bannister, assignors to Muncie Wheel Company, Muncie, Ind.  
 1,012,936—Front drive wheel for automobiles. Peter Turon, Los Angeles, Cal.  
 1,013,085—Tire for vehicle wheels. Wm. T. Whitlock, assignor to The Fisk Rubber Company, Chicopee Falls, Mass.  
 1,012,778—Fifth wheel. Frank E. Wilcox, assignor of one-half to H. C. Brown, Mechanicsburg, Pa.  
 1,012,954—Headlight adjuster. Alonzo S. Williams, Taft, Okla.  
 1,013,473—Vehicle brake. Harald E. F. R. Block, Copenhagen, Denmark.  
 1,013,743—Hub for vehicle wheels. Christian Christiansen, Kenmare, N. D.  
 1,013,374—Detachable rim for pneumatic tires. Walter E. Copithorn, Natick, Mass.  
 1,013,535—Hinge for coach and automobile bodies. Franklin Crawford and W. Whiteley, assignor to North & Judd Manufacturing Company, New Britain, Conn.  
 1,013,282—Vehicle wheel. Hugh Duncan, Langside, Glasgow, Scotland.  
 1,013,596—Tire. Alfred Freschl, Chicago, Ill.  
 1,013,547—End mounting for vehicle springs. Benjamin A. Gramm, Bowling Green, Ohio.  
 1,013,487—Pneumatic spring for vehicles. Lucien R. Gruss, Chico, Cal., assignor to The Pneumatic Cushion Company, Inc., Phoenix, Ariz.  
 1,013,387—Vehicle rim. James E. Hale, assignor to The Good-year Tire and Rubber Company, Akron, Ohio.  
 1,013,656—Spring wheel. Wm. D. Hester, Durham, N. C.  
 1,013,295—Vehicle wheel. Thomas B. Jefferey, deceased, Kenosha, Wis.; K. E., C. T., and H. W. Jeffery, executors.  
 1,013,554—Pneumatic wheel. John W. Livingston, assignor of one-half to J. Noble, Livingston, Wis.  
 1,013,188—Wheel hub. Matthew T. Long, Helena, Okla., assignor to The Standard Steel Tube Company, Toledo, Ohio.  
 1,013,300—Headlight for vehicles. John O. McKean, Westfield, Mass.  
 1,013,808—Pneumatic spring for vehicles. Charles R. Palmer, Cincinnati, O.  
 1,013,436—Spring hub. Davis A. Pickens, assignor of one-half to J. L. Barefoot, Mendenhall, Miss.  
 1,013,446—End gate. Wm. A. Rogers, Boicourt, Kas.  
 1,013,450—Transmission gearing for motor vehicles. Charles Schmidt, assignor, by mesne assignments, to Packard Motor Car Co., Detroit, Mich.  
 1,013,577—Vehicle spring. Frank Wheeler, Orange, Cal.  
 42,073—Design, automobile body. Oliver P. Fritchle, assignor to The Fritchle Automobile & Battery Co., Denver, Colo.  
 42,074—Design, vehicle body. Henry B. Joy, assignor to Packard Motor Car Co., Detroit, Mich.  
 42,075—Design, vehicle body. Richard S. Richeson, St. Louis, Mo.  
 1,014,357—Antiskidding tire. George J. Adam, Chicago, Ill.  
 1,013,855—Vehicle spring. Warren W. Annable, Grand Rapids, assignor to Annable Pneumatic Spring Co., Detroit, Mich.  
 1,014,034—Whiffletree. Richard E. Barrett, Boykins, Va.  
 1,014,558—Resilient wheel. Ernest C. Bass and E. S. Hough, London, Eng.  
 1,014,552—Automobile chassis. Wm. H. Bell, assignor to O. J. Karsch, New York, N. Y.  
 1,014,439—Steering gear for automobiles. Philip H. Bellmore, Missoula, Mont.  
 1,014,036—Gearing for motor vehicles. Stephen S. Bennett, Chicago, Ill.  
 1,014,366—Shield for automobiles. Theodore F. Bourne, Montclair, N. J.  
 1,013,929—Dump wagon. Wilbur L. Collins, assignor to Newark Wagon Co., Newark, N. Y.  
 1,014,121—Draft equalizer. Everett Compton, Earlham, Iowa.  
 1,014,284—Guard for swingle trees. Henry F. Corey, Marne, Iowa.  
 1,014,131—Vehicle wheel. Benjamin A. Dennis, assignor to T. A. McGrath, Providence, R. I.  
 1,014,132—Road vehicle. Bramah J. Diplock, Wheatsheaf Wharf, Fulham, Eng.  
 1,014,579—Attachment for wagon bodies. George F. Edington, Jeffersonville, Ind.  
 1,014,584—Whiffletree detaching device for vehicle thills. Emil Eklund, Pennock, Minn.  
 1,014,055—Wheel. Melvin J. Foyer, assignor to The Foyer Bros. & Co., Toledo, O.  
 1,014,627—Automobile headlight-turning device. Raymond G. Gaskill, Fort Deposit, Md.  
 1,014,145—Lock for motor vehicles. David P. Graham, Detroit, assignor of one-half to L. C. Hayden, Tecumseh, Mich.  
 1,014,464—Reinforced inner tube for pneumatic tires. Frederick H. Hall, North Lindsay, Eng.  
 1,013,878—Safety cranking device. Roland C. Hilton, Quincy, assignor to Hilton Mfg. Co., Boston, Mass.  
 1,014,007—Tire. George W. Kitterman, Berwyn, assignor of one-half to M. D. Matteson, Chicago, Ill.  
 1,014,075—Vehicle wheel tire. John H. Lorimer, Philadelphia, Pa.  
 1,014,406—Vehicle spring. Michael M. McIntyre, assignor to The Perfection Spring Co., Cleveland, O.  
 1,013,946—Spring wheel. Wm. B. McPike, Bowling Green, Mo.  
 1,014,318—Cushion tire. Myron C. Merriman, Detroit, Mich.  
 1,014,409—Spring wheel for vehicles. Paul H. Minnis, Lansing, Mich.  
 1,014,244—Cushion wheel for vehicles. John F. Mitchell, Topeka, Kas.  
 1,013,949—Spring-felly automobile wheel. Thomas F. O'Brien, Highmore, S. D.  
 1,014,177—Vehicle wheel hub. George T. Reichenbach, New Castle, Del., assignor to H. O. Peck Automobile Wheel Co., Inc., Portland, Ore.  
 1,014,339—Side-board and wagon clamp. Albert C. Smith, Albion, Ill.  
 1,014,345—Vehicle tire. George E. Starn, Camden, assignor to H. M. Dover, Palmyra, N. J.  
 1,014,533—Spring wheel. George V. Stein, assignor of one-third to A. F. Cabel, Washington, and one-third to H. Weill, Indianapolis, Ind.  
 1,014,540—Wagon. Milner Van Pelt, Sabin, O.  
 1,014,541—Spring wheel. Samuel F. Walker and G. Hunter, Bozeman, Mont.  
 1,013,911—Tool for centering sprockets upon vehicle wheels. Herman Weber, Colorado Springs, Colo.  
 1,014,429—Headlight for automobiles. Otis B. Woodfield, O. M. Morris and J. W. Gosling, Spring Lake Beach, N. J.  
 1,014,553—Automobile top. Claude M. Zellers, St. Louis, Mo.  
 42,083—Design, automobile lamp. Wm. S. Hamm, Hubbard Woods and R. M. Newbold, assignors to The Adams & Westlake Co., Chicago, Ill.  
 42,090—Design, vehicle wheel anchorage device. Wm. E. Perrine, assignor of one-third to C. Girl, Cleveland, and one-third to E. W. Farr, Cleveland Heights, Ohio.  
 42,091—Design automobile horn. Ernest Rubes, Brooklyn, N. Y.  
 1,014,743—Wagon box lift—Samuel D. Bassford, Tooele, Utah.  
 1,015,124—Adjustable axle nut. Larkin Beck, Kirtland, N. M.  
 1,015,270—Snowmobile attachment. Fred Borg and E. W. Lantz, Hannah, N. D.  
 1,014,808—Motor vehicle. Britton E. Byrd, Durham, N. C.  
 1,014,814—Metallic tire. Clarence E. Cox, Fairfax, Mo.  
 1,015,006—Automobile spring wheel. Max E. Crandall, Lawton, Okla.  
 1,014,694—Vehicle wheel. Alpha Y. Davis, Kansas City, Mo.  
 1,014,816—Radiator for automobiles and the like. Alfred Dipert, Detroit, Mich., assignor to C. W. Dipert, Buffalo, N. Y.  
 1,014,644—Resilient wheel. Robert E. Ellis, Riddrie, Glasgow, Scotland.

1,015,019—Autosled. Charles F. Hamel, assignor to M. Pauken, Toledo, O.  
 1,015,186—Vehicle wheel. Wm. H. Humfeld, Kansas City, Mo.  
 1,015,035—Tire for vehicle wheels. Benjamin F. Lare, Philadelphia, Pa.  
 1,015,040—Carriage hinge. Joseph Laurhc, New York, N. Y.  
 1,014,884—Resilient wheel. Harry Leap, Camp Meeker, Cal.  
 1,015,199—Spring wheel. James Lowe, assignor of one-third to J. Pellaxio, San Francisco, Cal.  
 1,015,238—Vehicle wheel and tire. Samuel N. McClean, Cleveland, O.  
 1,014,713—Automobile buffer. Allan L. McGregor, Duluth, Minn.  
 1,015,275—Electrical equipment for automobiles. John L. Milton, Chicago, Ill.  
 1,015,061—Automatic steering device. August T. Nelson, assignor to Automatic Steering Company, Milwaukee, Wis.  
 1,015,064—Vehicle wheel. Samuel Oldham, Philadelphia, Pa.  
 1,014,851—Tire plug. Philip A. Rosenthal, New York, N. Y.  
 1,014,912—Tread for pneumatic tires. Alvin H. Shoemaker, assignor, by mesne assignments, to Hurley Hercules Pneumatic Tire Co., Portland, Ore.  
 1,014,858—Spring wheel. Robert Stock, New York, N. Y.  
 1,014,978—Vehicle brake. David S. Stuck, Cocolamus, Pa.  
 1,015,105—Dumping wagon. James Watson, Wilmington, Del.  
 1,014,928—Wagon for vehicle tongue support. Dee W. Wilhelm, assignor of one-half to J. H. Williams, De Leon, Texas.  
 1,015,113—Tire. August E. Winter, Franklin, Pa.  
 1,014,734—Dump cart. Wm. S. Witten, Chicago, Ill.  
 1,014,736—Reinforced-rim spring construction. Leonard A. Young, Detroit, Mich.

Copies of above patents may be obtained for fifteen cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

## RECENTLY EXPIRED PATENTS OF INTEREST TO THE VEHICLE INDUSTRY

### Patents Expired May 14, 1912

539,060—Combined end-gate and scoop-board for wagons. Scott Kerr and Robert S. Moore, Washington, Iowa.  
 539,087—Draft equalizer. Johann Schiffler, Dusseldorf, Germany.  
 539,093—Dumping body for vehicles. Arthur P. A. Stephenson, Lebanon, Ind.  
 539,094—Dumping wagon. Walter G. Stewart, Reading, Pa.  
 539,120—Thill coupling. William Dee, Chester, N. J.  
 539,136—Running gear for vehicles. George A. Keith, Saginaw, Texas.  
 539,307—Vehicle running gear. Louis F. Robare, Au Sable, Forks, N. Y.

### Patents Expired May 21, 1912

539,555—Air pump for pneumatic tires. Benjamin F. Sparr and Millard F. Sparr, Brooklyn, N. Y.  
 539,582—Draft equalizer. James W. Gurnsey, Liberty, Pa.  
 539,586—Pneumatic tire. Adam A. Long, Rochester, N. Y.  
 539,608—Portable forge. Robert S. Bozon, Birmingham, Eng.  
 539,646—Discharge attachment for wagons. Leonhard Rodenhansen, Philadelphia, Pa.  
 539,707—Method of manufacturing pneumatic tires. John Richardson, Passaic, N. J.  
 539,736—Running gear for vehicles. Frederick C. Haas, New York, N. Y.

### Patents Expired May 28, 1912

539,822—Dumping wagon. Henry S. Palm, Reading, Pa.  
 539,826—Rubber tire. James G. Rodgers, Springfield, O.  
 539,853—Street cleaning cart. Joseph H. Bryam, Philadelphia, Pa.  
 539,858—Thill coupling. George W. Davis, Gilsum, N. H.  
 539,873—Thill coupling. Jerome J. Landry, New Orleans, La.  
 539,897—Wagon pole. John Graves, Brooklyn, N. Y.  
 540,020—Vehicle wheel. William Horsley, Terre Haute, Ind.  
 540,030—Thill coupling. Edward P. Spahn, Dubuque, Iowa.  
 540,074—Machine for recessing wheel rim. Harvey G. Shepard, New Haven, Conn.  
 540,119—Axle, axletree, and box of vehicles. John Tagell, George B. Edwards and Thomas Darby, Melbourne, Victoria.  
 540,172—Vehicle hub, box, and spindle. David M. Loucks, Jacobus, Pa.

### Patents Expired June 4, 1912

540,229—Combined tongue and thills for vehicles. Tancred P. Blain, Redfield, and Peter A. Forth, Turton, S. D.  
 540,332—Shaft support for vehicles. Stephen R. Peters, Sterling, Mass.  
 540,384—Supplemental seat for vehicles. Abbott L. Hall, Cambridge, Mass.  
 540,439—Whiffetree hook. George H. Hayward, North Reading, Mass.

540,484—Dump wagon. George J. Croff, Chicago, Ill.  
 540,494—Self-oiling wheel. Ebenezer S. Jennings, Pomeroy, Ohio.

The above lists of patents, trade marks and designs of interest to our patrons are furnished by Davis & Davis, solicitors of American and foreign patents, Washington, D. C., and St. Paul Building, New York City.

## GRAMM FORMING ANOTHER COMPANY

B. A. Gramm, having relinquished office and all but a small stock interest in the Gramm Motor Truck Co., of Lima, O., the control of which was acquired by John N. Willys, of the Overland Co., of Toledo, is now busily engaged in organizing another company for the manufacture of commercial trucks. The new plant will perhaps be located in Lima, although it is not probable that it will be operated under the name of Gramm as that name is copyrighted and is the property of the old company. Mr. Gramm made his success in the truck business by catering to wagon builders and it is likely that he will pursue the same policy in the new company. Mr. Gramm is a pioneer in motor truck building and his long and wide experience in the business will be of inestimable value to the new company.

## OBITUARY

**T. Milton Richards**, aged 70, died May 27 of Bright's disease at his home in Cumberland, Md. For many years he conducted a blacksmithing and wagon business in that city. He is survived by his widow and one son.

**William Erby**, of Chicago, Ill., pioneer carriage manufacturer, died May 29.

**John Fackler**, 69 years of age, a retired wagon maker of Louisville, Ky., died May 24, following a lingering illness, of heart disease.

**Leander Tennis Bower**, 68, president of the Connersville Buggy Co., died June 11 at his home in Connersville, Ind., after an illness of three years. He was also vice-president and a director of the Farmers and Merchants Bank, a director of the Glenwood State Band, a director in the Commercial Club, and also a member of the board that has in charge a fund for superannuated Methodist preachers in Indiana. Mr. Bower was born in Wayne county, and in 1868 was married to Miss Harriet Zell, of Indianapolis. Two children survive. He was at one time a member of the city council. He was six feet two and a half inches tall and broad in proportion. He was very successful financially, and for two years had been retired, though nominally holding his various offices, and actively engaged in the promotion of the Commercial Club, which he did much to organize and sustain.

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### PATENTS.

**Patents**—H. W. T. Jenner, patent attorney and mechanical expert, 608 F St., Washington, D. C. Established 1883. I make a free examination and report if a patent can be had and exactly what it will cost. Send for circular.

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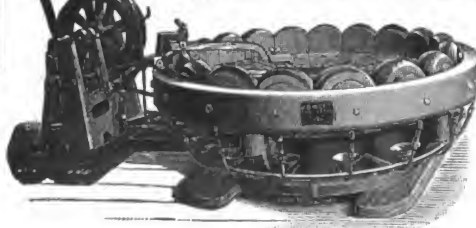
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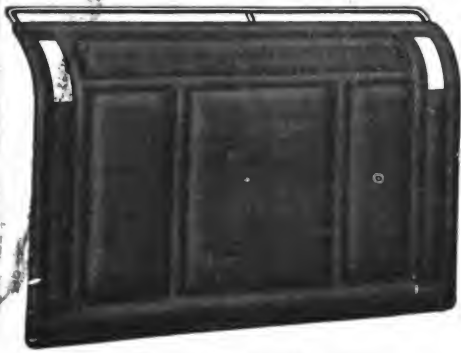
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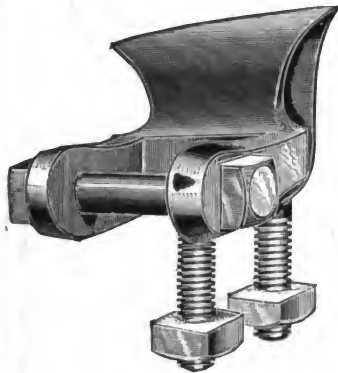
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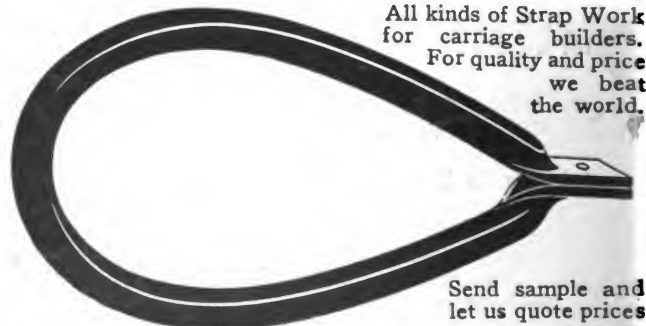
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It requires six operations and six annealings to make this one-piece cage out of flat sheet-steel.



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This roller receives as great care, accuracy, and fine workmanship as any part of a watch.

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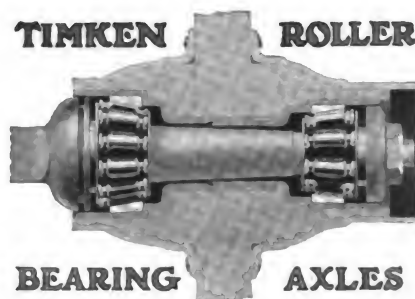
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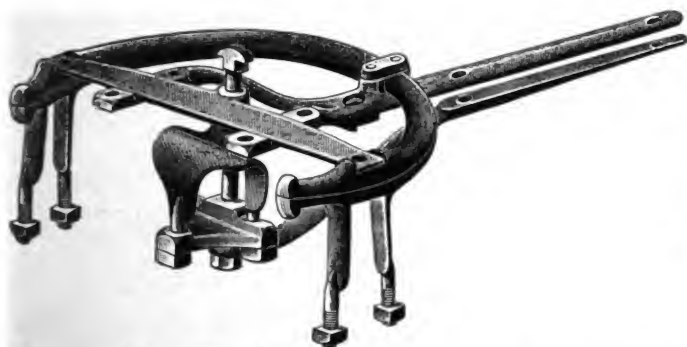
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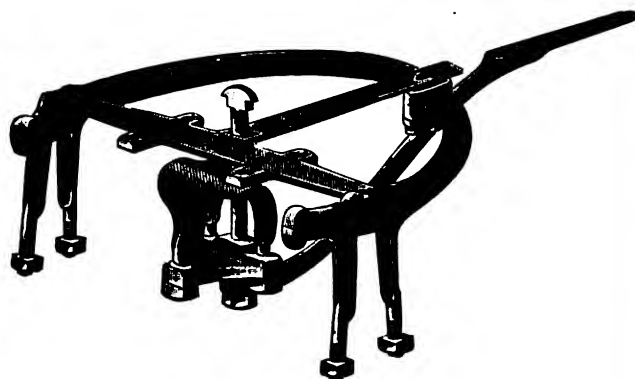
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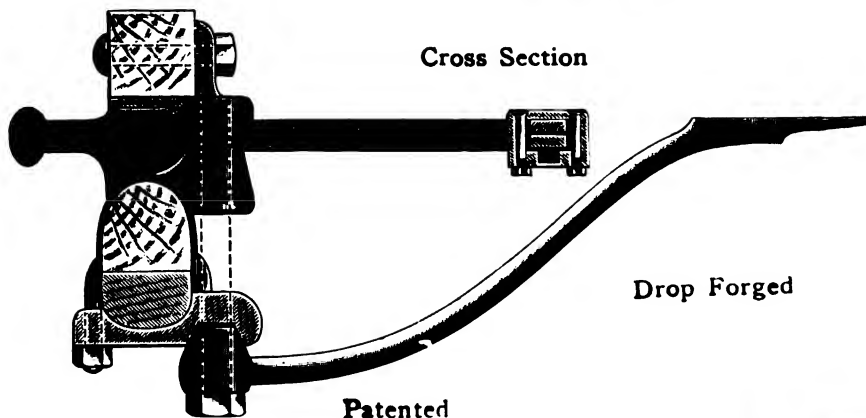
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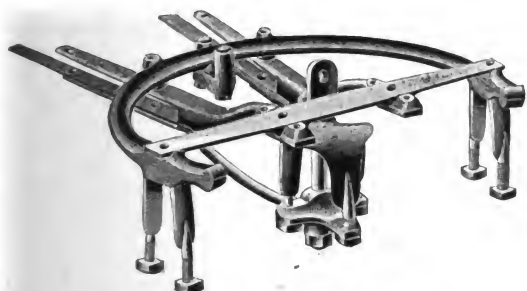
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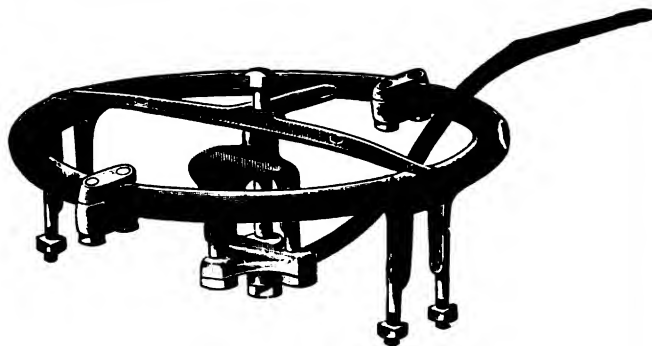
Double Locked in Head Block  
Plate and King Bolt Yoke. No  
Strain on Bolt. No Turn on  
Nut. Guaranteed.



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No. 1905—Gear Iron



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Forget your trouble and decide at once to use WILCOX DROP  
FORGED IRONS. Write us for pleasure

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THAT'S what you want, friend DEALER, and that's good news involved in the handling of

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We'll tell you why!

BECAUSE, your customer will not be worried by seeking to avoid the many sharp things that puncture other tires, for they won't puncture THE RACINE as it takes a pressure of over 4,000 pounds to puncture the chrome tanned leather outside jacket.

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For Automobile Bodies and Parts

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To Cut 5-16, 3-8, 1-2, 5-8, 3-4 inch.

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VOL. LIV

JULY, 1912

No. 4

## THE TRADE NEWS PUBLISHING CO. OF N. Y. Publishers of THE HUB

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24-26 MURRAY STREET, NEW YORK.

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THE HUB is published monthly in the interest of employers and workmen connected with the manufacture of Carriages, Wagons, Sleighs, Automobiles and the Accessory trades, and also in the interest of Dealers.

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GERMANY.—Gustave Mieser, Bohn & Rh. Subscription price, 12 marks, postpaid.

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## Atlantic City Convention.

It is too early for all in interest to commence thinking about the approaching Carriage Builders' convention.

We gladly publish the announcements of the secretary of the Association as fast as they come from his hand, but it is a human trait to pass official announcements as something not immediately important, only to inquire about the very things dinned into the ears, but somewhat later in the day.

The exhibitors, especially, should look alive as concerns the space it is intended to take. The ironclad rule of the Association about such things is to follow the plan of priority of application in cutting up the tenderloin spots, therefore, the early applicant gets the gilt on his gingerbread, whilst the trailer does not have more than a square meal.

Interest in the proceeding is awakened already. Applications for space, we are informed, are already coming in. All who intend to exhibit must have made tentative plans to do so about this time, so it would be the part of wisdom to engage the space at an early day.

If the same interest is developed this year as was in evidence last year, the accommodations are going to be crowded. If the number who say they are going to the

convention do not suddenly change their mind, the crowd will be somewhat over the average, especially the members and visitors from south of the Potomac.

There is a body of sentiment among the exhibitors, at least, that think Atlantic City would be a good permanent resting place for the convention; there are others who think that such a permanent "resting place" would presage the peace of death. It would be a good plan for both kinds of sentiment to gather in force, as the issue might come up; we think it will.

Judging from the solitary experience, Atlantic City is a very nice place to hold a convention in September. We have not had a chance to enjoy a September down-pour and a storm from the southeast. Something of that kind would have a very marked effect on sentiment as to the desirability of the place for the purpose.

## Subsidence of the Tide, and After.

Now that most of the people who could, or who could not, but would afford an automobile have had their desires appeased, there is quiet enough in the trade of building the machines to let the makers of them pause and think.

Thinking tends to improvement, and we are prepared to welcome a lot of ideas along such lines.

Being coach-body builders by profession, we naturally turn to a consideration of the comfort of the carriage for the passenger. It is a hard problem, due to the speed made use of in conducting transportation. That rear seat, no matter how near an approach it is to a feather bed, is a submarine mine in its effect on the stability of the passenger when a bump is encountered going at a very rapid pace. Something must be done for its improvement, and there is now time to think about it.

The engineering end presents its difficulties, too. Simplicity of parts, and fewer of them, are greatly to be desired by the owner.

The stench of gasoline is something that could be missed to advantage. Perhaps the day of alcohol is approaching. There isn't a latent explosion in every tank of alcohol.

The maintenance cost, or "feed," is something that could be improved to the joy of the footer of the bill. Perhaps with fewer parts there will be fewer repairs, which will be a sad day for the garage as a profitable investment.

We are coming to understand the painting of the body of the car in such a way that the soap and acids used in banishing grease, etc., are not altogether destructive

to the finish. It has called for new formulas in varnish making.

But when all is said and done, granting the marvelous achievement the machine is, it is built altogether too much like a watch—too many parts in a small compass subject to violent usage.

Some genius of a mechanical turn must come along and throw half of them away, and evolve a better engine as to durability. This man will not be one of the orthodox engineers, who are today the same as they were in the days of Stephenson and the advent of the locomotive engine. They are our genuine scientific "Burbons," learning not much, and forgetting nothing that is in the books, and ready to say it can't be done.

### Importance of Oiling.

At the present time there is more "efficiency" talk echoing through the business press than most any kind of talk.

We are all faddists and we do love to run after the strange gods, especially if they are of the half-baked kind.

The theorists have figured efficiency down so fine that the economy of breath can be "timed," too. But they should get busy figuring the economy of avoiding strikes and discontent among workmen due to the natural aversion for being watched and timed and "speeded up" on the spy system.

There is a limit to getting everything out of the employe by the employer and giving as little as possible in return. It is not good business policy, either, because the returns are not good. Really good help, in the sense of men with brains and skill, is not a plentiful commodity in the labor marts. The efficiency man's method with such a class is not productive of the desired results. Spying is always very unpopular with workmen otherwise tractable and amenable to an argument.

It has always been the rule, and it seems to have received tacit consent of the workers, for the employer to get everything possible out of the employe and give as little as possible in return. But this plan has had the bad effect of increasing the army of "soldiers" in a place, and this class has evolved the so-called expert soldier who is quite as skillful as the expert efficiency man in devising ways how not to do too much, but remain busy.

The piece work idea was evolved as a way out of the maze of inharmonious conditions. The schedule was always set by someone familiar with conditions, but speeded up so as to keep the average man moving to earn much more, or to keep in sight of the top-notch worker.

But good workmen in this land have a sort of instinct for machinery. They handle it well, so when the average worker was put on the piece, and told to hustle to make more, he caught the train, and did make more, while the top-notch was making a good deal more. This increased the output and the profits, of course, and the conditions ought to have been considered comfortable all around, but it did not or does not turn out so.

As the efficiency increases the rate of wage is lowered

on the well-considered plan that the workman was to make about so much, no matter how much more his speeded-up efforts made for the boss.

Of course it did not take the operator long to come to the conclusion that if he was allowed to make just so much, he would do just so much as would be enough to get the allowance. And that is what he is doing.

To those who observe such matters it doesn't seem that the machinery is running well. It needs more and better oiling rather than more speed. The worker has a very disagreeable habit of doing his own thinking. His conclusions are often started from wrong premises, but they start from somewhere, at least. A thinking man is a good helper in any factory, but very poor material when it comes to trying to exploit him.

Unthinking greed versus thinking resentment is not a good team in any factory, and no system that can be devised will make it work in that nice cheerful way work ought to be done to be done well.

How nice it would be if the importance of oiling was more generally impressed on those who do the oiling and those who would like to see more "oil in the can" for the effort expended, rather than this blatant efficiency din—a noise made mainly by doctrinaires whose chief object is a little more oil in their own cans.

### Armorial Bearings and Crests.

Since the vogue of the automobile the size of heraldic panel decoration has become diminutive compared to what it used to be, and the monogram has reduced itself to just initial letters instead of an involved design. It has become more like the lettering on a packing box, but very small.

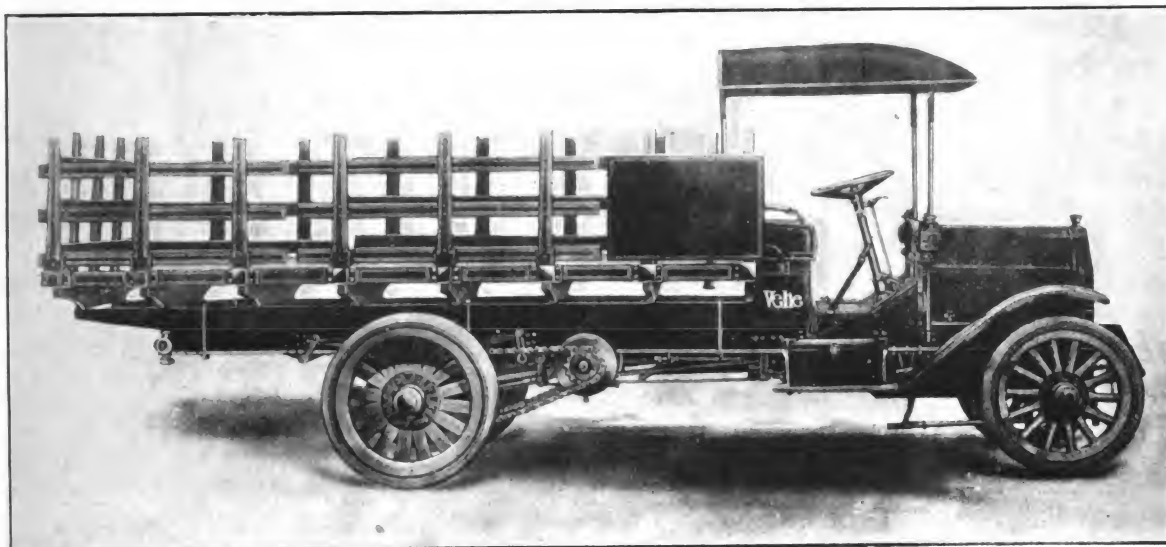
It is not so pleasing to look at as the former panel decoration; in fact, the whole effect of the automobile seems to be more on the side of utility than elegance.

We are told that black spruce first, then mahogany and black ash in order, are the woods required for making aeroplanes.

The treatment of the hood or bonnet of the chassis is becoming more agreeable in line and curves. Perhaps the engineer is getting closer to the body builder. Perhaps they even talk it over.

Steaming oak and gum under pressure to facilitate drying has been experimented with, it is said, the result that it materially shortens the time between cutting and marketing, and makes a better product.

The condition of a man's physical and mental being is what determines his efficiency; it is to the man's environment, the conditions under which he lives; the things with which he comes in contact which affect his mind and body; it is to these we must look, and it is these we must change if we would increase man's efficiency.



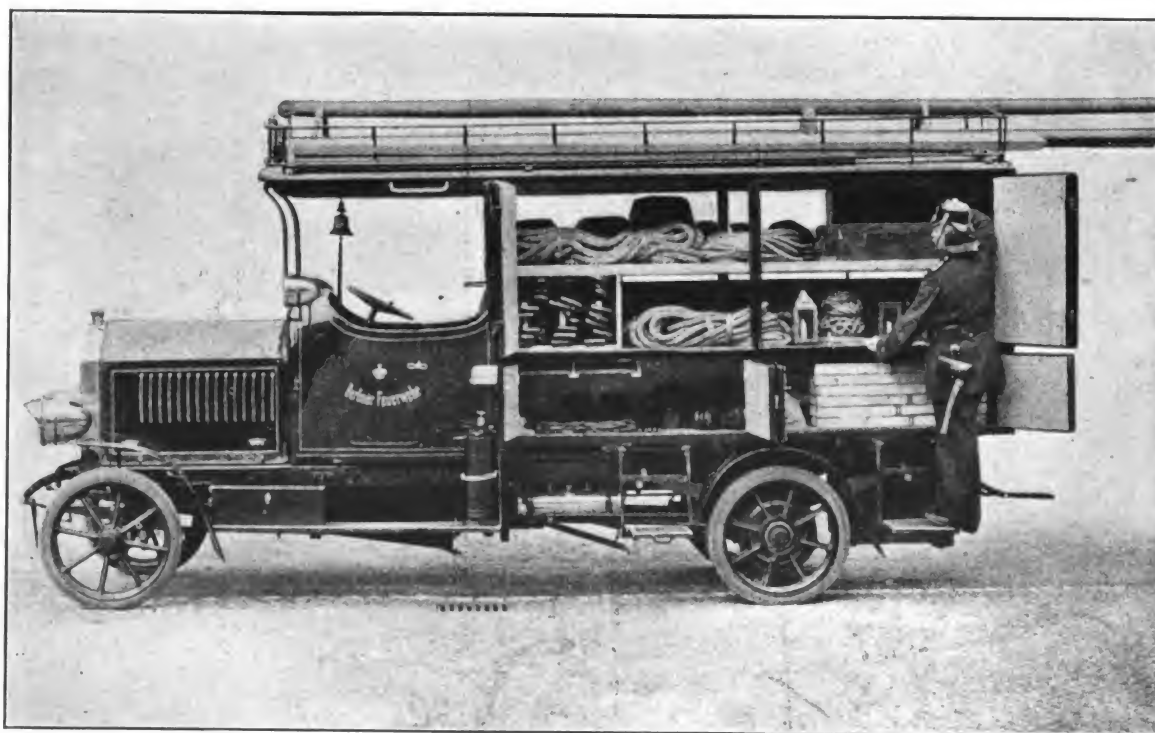
**THREE-TON TRUCK**  
Made by Velie Motor Vehicle Co.  
(See Description)



**ONE AND ONE-HALF TON TRUCK**  
Made by Velie Motor Vehicle Co.

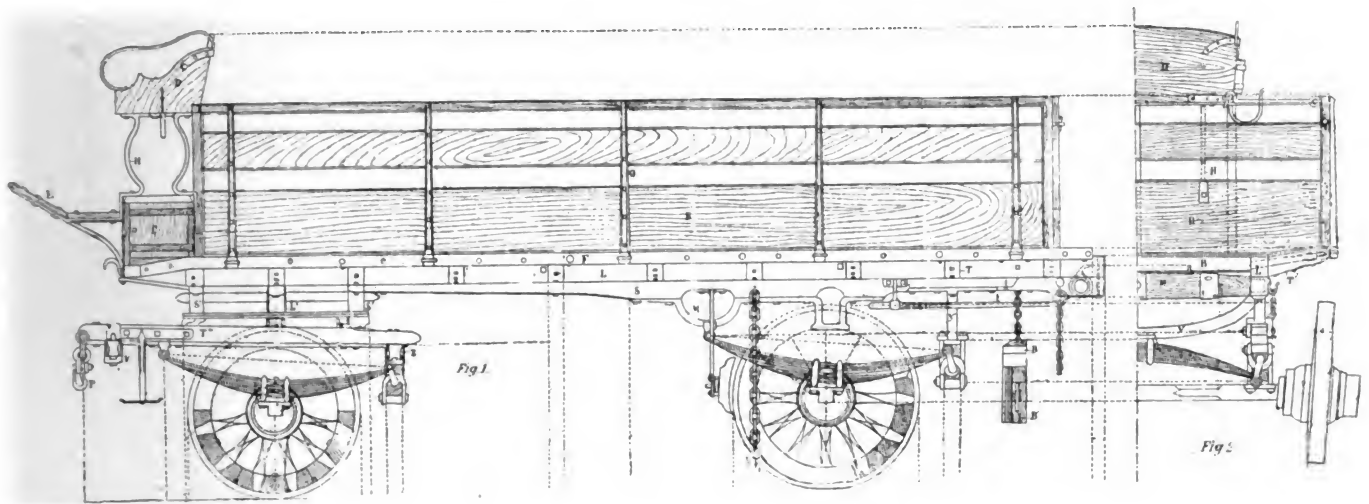


**TWO-TON COMBINATION HOSE AND CHEMICAL WAGON**  
Made by Knox Automobile Co.

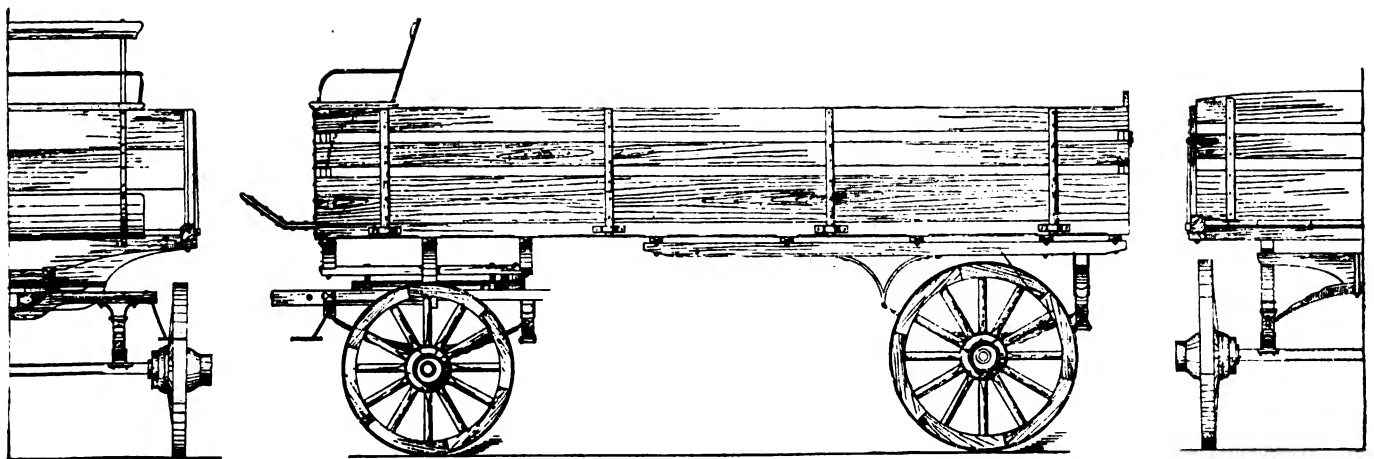


**GERMAN FIRE WAGON**  
(See article page 106)

## Foreign Types of Commercial Vehicles

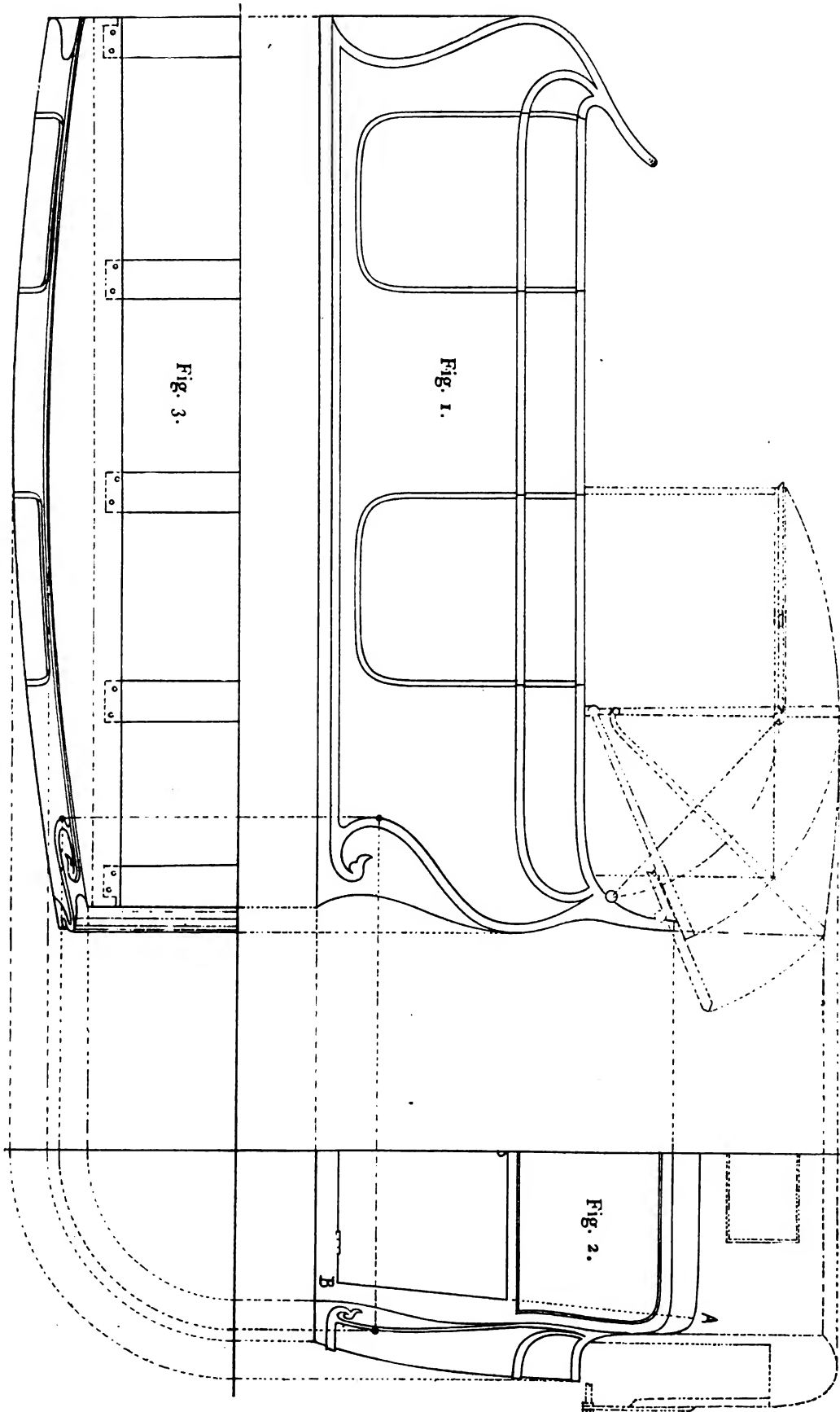


**FRENCH COMMERCIAL WAGON**



**GERMAN COMMERCIAL TRUCK**





WORKING DRAFT OF HALF CANOPIED OPEN CAR BODY WITH NEW IDEAS  
(Described on following page)

# Wood-working Shop.

## WORKING DRAFT OF HALF CANOPIED OPEN CAR BODY WITH NEW IDEAS

(Illustration on preceding page)

In the variety of open cars, the half canopy or hooded body is very popular with motorists; the half hood appeals more directly to the carriage in which society sunned itself in the halcyon days of the smart barouche with its prancing horses, or later, in the richly designed victoria.

The design we give here is built with flush sides as is the fashion today with almost all open bodies. The body is made with deep quarters and cut up with belt panel. There is one characteristic that must be given prominence to and that is the rise of the back elbow to reach a deep top cross bar rail, on the top of which the elbow head prop is fixed so that the angle of the hood when down may be high and act as a protector against the rising of dust and eddied windage. To the body cross rail is fitted a false back rising  $3\frac{1}{2}$  inches higher; this is an additional protection, while it provides for a deep back squab, which is one of the comforts of internal fitting, as well as a great help in the upholstering of the body in the completion of a comfortable repose to the occupant.

To provide for the head line when down being held at an acute angle, the back pillar line of the body is designed with the object of meeting this necessity, while its serpentine lines give a flowing effect which softens the harshness of the straight line and throws a harmony to the limited curvature in the body's design.

The design is a striking breakaway from the stereotyped flush bodied car; its outline infuses a feeling of art that lifts it away from the common herd of its class.

Although these bodies are now turned out of hand with metal panelling and the mouldings planted on and the panels enamelled instead of painting, they don't stand for any length of time, for once the enamel chips and the weather gets to the metal an oxide is set up; there is no permanent cure in repairing the surface as is possible on a wood panel.

The body may be made with metal panels, but it is intended by the designer that it should be made as a carriage builder would make it, that is, to frame it and panel in mahogany, the mouldings being worked up in the solid and gigger grooved as a landau or brougham body is built.

The body is built with deep turnunder and with a quick turnunder line on the pillars. The hind ogee corner pillar would have to be got out with the horizontal square on the back curved edge, and a swell left on the side of the foot to meet the line of the body side sweep on the bottomside turnunder line in the plan Fig. 3.

With the exception of the back pillar as here explained, the body is structurally to the expert body maker a plain job, but exacting good workmanship in its construction and finish.

The front bonnet quarter is finished in wood panelling the same as the body quarters, or it can be made of metal sheeting. The steering column shield can also be made of sheeting as the vast majority are, or it can be made in panel and the moulding worked in the framing as the body is done. The front of the quarter is, of course, made to take the bonnet, the quarter protecting all the engine guides and indicators, which are kept in full view of the chauffeur.

The hood is of simple construction, having two slats and a front horizontal slat, which lines on the top of the wind screen as shown; a cornice moulding is fixed round the slat; this cornice is necessary to catch the water coming off the front

of the hood and so prevent it going inside of the body. The cornice conducts the water to the back of the front upright slat, and drops off into the road. The hood is of course wider across the pillars of the body and is made portable, while the horizontal slat is made to hinge up and drop down a rod slide on the inside of the front slat. There are lugs forged into plates which are fixed to the inside of the elbows as provision for the fitting up of a hood—if the body is sent out without a hood in the first instance. These hoods project from the side of the body at door pillar from two to four inches, which is a great advantage in protecting the occupants from rain. Cranked stays are made to bolt into the holes of the body plate lugs, while the hood joint is bolted to the stay by a boss hole to take the bolt end of the stay, so that the hood is easily taken off and on as desired.

Fig. 1 shows the elevation design complete. Fig. 2 shows the half back view of body and the design of the moulding lines and depth of panels. The rocker panel is fitted with a door, so that the bottom of the body may be used as a storage for extra wheel and other accessories.

The contour of the ogee pillar in its turnunder width on the body is measured off the plant and its developed curvature correctly traced, and the points of width propped off. Rule of thumb body makers would not trouble about this development. They would accomplish this dressing by "rounding up," that is, dressing the turnunder of the pillar to tally with the body standing pillar, and dress off any inequalities to the eye that might present themselves, without being able to reason the matter out technically, though they would, of course, plume themselves on being "practical men."

Fig. 3 shows the half plan of the body. From this section every point of the body can be measured off correctly. The base line, or as some body makers call it, the elbow side sweep, determines every point of extreme width. The inner sweep shows the turnunder side sweep line and determines every point of width on the bottom of the body. The developed widths of the hind corner pillar are shown here and propped off to harmonize with the points on the half back section, Fig. 2. To the man without technical knowledge these lines are difficult to see and follow, while to his bench mate who has wisely followed a technical training through which to control his practical constructions, the lesson becomes as plain as a straight line, for he can work with more deftness and exactitude than the man with the practical knowledge only.

The lines of shoulder framing are not shown on the drawing; they would be too confusing to be of plain practical use.

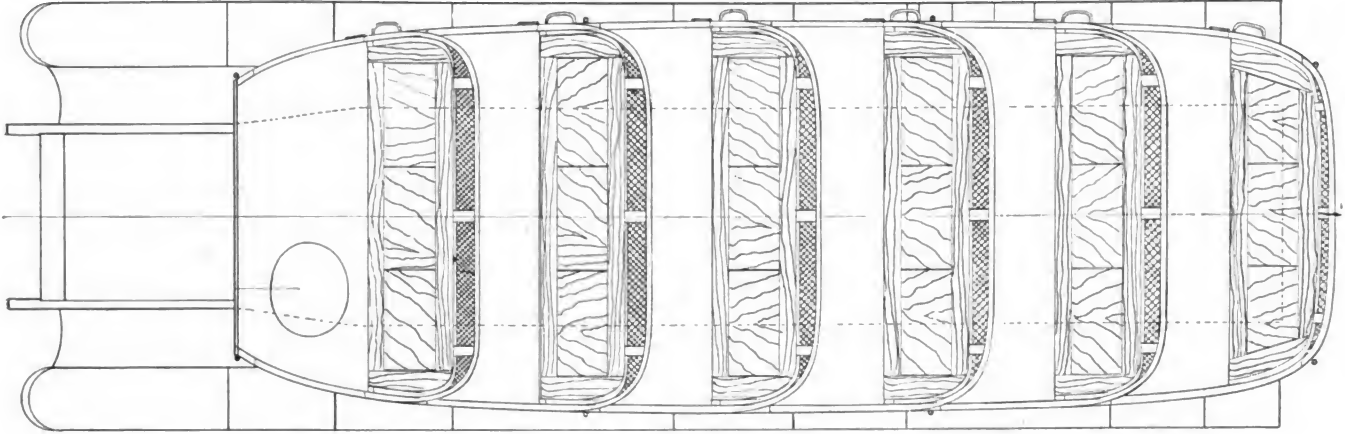
In the back section, the inside line of the pillar is shown on A-B; the line also gives the door line. The pillar is got out wide enough to work the ogee moulding or in the elevation, and up to take the cross rail where the head falls on. The rocker is formed by forcing the pillar back the depth of the moulding. The pillar would have to be got out 13 inches wide, but cut up to the line of the curves.

The sizes are: Length of body on chassis line, 8 ft. 11 in.; length of hind quarter on elbow, 28 in.; width of door, 23 in.; width of middle quarter,  $24\frac{1}{2}$  in.; width of front door at widest part,  $21\frac{1}{2}$  in.; width of front quarter, 12 in.; full depth of body on door line, 2 ft. 8 in.; over mouldings, 2 ft.  $6\frac{1}{2}$  in.; width of body on elbow points, 43 in.; width of body on chassis, 36 in.; width of body over door pillars at front hind door, 4 ft. 7 in.; depth of belt panel over mouldings,  $8\frac{1}{2}$  in.; height of hood from top of elbow line, 2 ft.  $6\frac{1}{2}$  in.; width of horizontal slat, 26 in.; height of shield from elbow line, 10 in., projecting upwards over door line, 7 in.; full width of hood across body pillars, 5 ft. 2 in., across back, 45 in.

### A SIGHTSEEING AUTOMOBILE BODY DESIGN

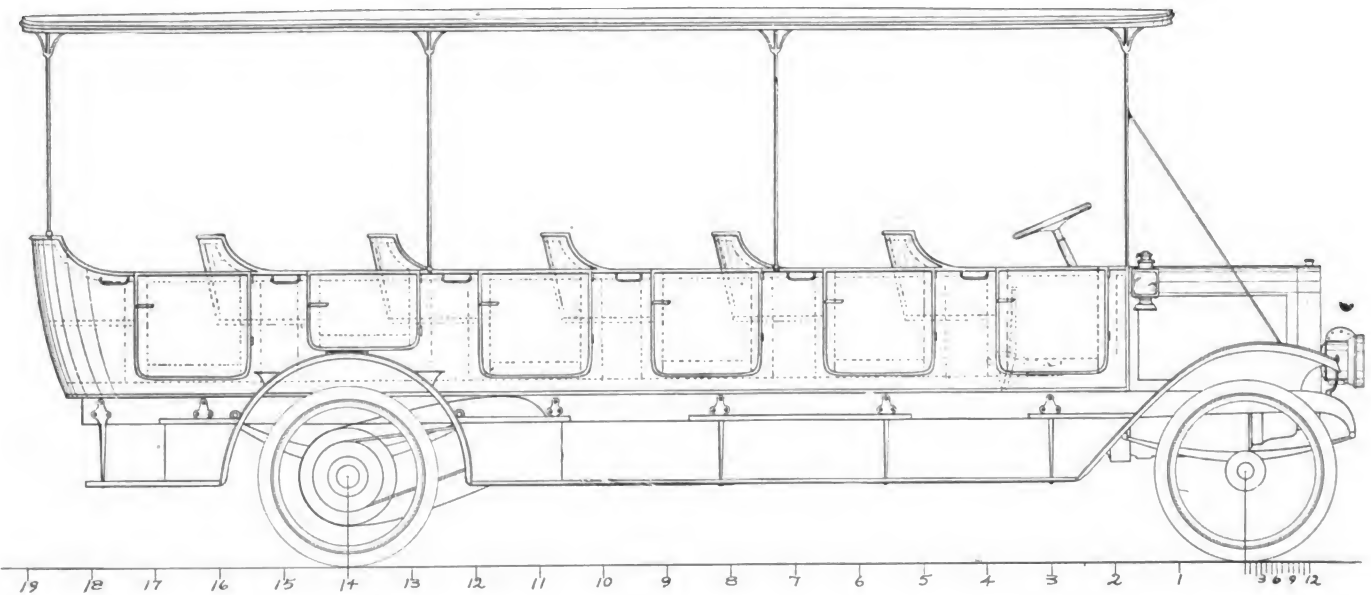
The two accompanying illustrations show in detail the working drawings of a sightseeing automobile body that is designed to accommodate 28 persons including the driver, the maximum seat room allowed for each person being 17 inches and the space between the seats for knee room being 15 inches. The total length of the body back of the dash is 17 feet and the maximum width is 6 feet 1 inch, the standing room under the top from the floor is 5 feet 8 inches which allows ample room

with cross members wherever the chassis construction will permit; the sides are framed up as indicated by dotted lines, the uprights and top rail being  $1\frac{3}{8}$  inches thick and the door framing is the same thickness; the seat rail is 1 inch thick and the seat frame  $\frac{7}{8}$  inch thick. All the framing is either lapped or mortised together in a manner to make the strongest possible construction, and the uprights on the side where doors are used are braced with an iron knee from the seat frame and the socket irons of the top are also braces running to the seat frame. The panels forming the body sides and seat backs are



for the average man to stand erect when passing to the seat on the left side of the car. The entrance doors are on the right side only and are arranged for separate passage to each seat, a double set of runboards are also provided so that the stepup is reduced to the minimum; the same runboard plan is carried out on the left side of the car so as to permit of quickly emptying the body by allowing the men to step over the side of the body in case of accident; also the operator can make use of this method of taking his position at the wheel should it be necessary for him to go out after the passengers have taken their seat beside him.

22 gauge soft steel screwed to the wood frame, and oval aluminum  $\frac{3}{16}$  inch thick by  $\frac{3}{4}$  inch wide is put over the screw and nail heads; this moulding is nailed on and the nail holes are filled up by rubbing the metal of the moulding into the opening. The body back panel is best and easiest made from aluminum sheet No. 16 gauge; this latter metal will work much better in forming the double bend of the corners than steel and it should extend around the sides to the rear of the door opening and joined to the steel side panels by butting to same at a point below the door. On the left side of the body a moulding can be put on to imitate a door in order to cover



This body is mounted on a 14 foot wheel base, left side drive chassis and no attendant accompanies the car other than the operator, unless it is some one to announce the points of interest passed en route, in which case the carrying of passengers on the front seat with the driver would have to be abandoned. This method of operating, however, will depend on local conditions.

The construction of the body is combination wood frame and metal panels, the sills are  $2\frac{1}{2}$  inches deep by 2 inches wide,

the joining of the panels.

The top is made as light as possible and furnished with curtains to completely protect the sides and back of the body; these curtains will be made in sections the length between the top standards and will be buttoned to the standards and to

It may be argued that hand work is better than machine wrought material, but those skilled in mechanical laws can negative this argument and point to the more rational theory of the degeneration in the mechanics following this avocation.

That this failing of skill in the art is a natural result of the absorbing of the elementary and secondary stages of what before constituted the trade, leaving the artisan very little real knowledge of the natural laws governing the materials he uses, and in a great number of cases entirely ignorant of the qualities most requisite to secure the ends desired. When we also consider that the proportioning of the spokes and hubs in most cases are fixed unalterably when purchased at the factories we will recognize one of the reasons why machinery has not produced correspondingly durable or economical results. This lack of intelligent, skilled workmen is not imaginary, though there are still many who can rank among the mechanics of any other profession. But the number grows less each decade and must, naturally, from the reasons given.

The remedy for this is apparent and does not consist in going back to what some term the "good old way," but advancing and establishing technical schools as has been done successfully in Europe, where the apprentice becomes familiar with everything calculated to be of use in his calling.

To reach a solution of the question, which is the better, a hand made wheel or one made entirely by the aid of machinery, requires that we should distinctly understand what is termed a hand made wheel, and just where we are to draw the line between the two.

As we have already stated, the wheel of today is more or less the production of machinery, and the question can be better understood if rendered, which is the better, a wheel made in a factory as a specialty, or one put together in the carriage shop under the control of a single operator. the top line of the body when down in use. In front the protection will be a storm curtain with celluloid lights and similar lights will be used in the side curtains.

The distinguishing features of this type of body design are the provisions made to secure the comfort and safety of the occupants, by having the body sides closed and the seats made to give practically the comfort that is secured in the tonneau of the touring car body. All passengers ride facing toward the front and the maximum clear vision is secured to each occupant.

## BEST MATERIAL AND METHODS FOR WHEELS

### Second Article

The art of wheel making is susceptible of the application of machinery. The operations are emphatically mechanical. The modern art has degenerated into what might be termed the assembling together of the different parts of a wheel, more appropriately, than wheel making, as machinery turns and mortises the hub, and that more accurately than can be done by the skilled mechanic. It also turns, tenons, throats, and polishes the spokes far more uniformly than formerly was done by hand. And instead of the old segmental rim we have those in half circles bent by machinery. These details have each grown into industries, and the wheel maker of today begins where his grandfather congratulated himself upon having finished the hardest part of his task. Nearly all shops are supplied with improved machines to accurately cut the tenon upon the end of the spokes, to hold in place the rim, the holes in which are bored upon the same contrivance, thus reducing the task still more; then as wheel making is strictly a mechanical art, the sequence will be that modern wheels must be better than those made by our grandfathers just to the amount that mathematically adjusted machinery is used in their construction.

The gradual decline in the skill and number of mechanics who made wheel making an avocation, created a demand for a wheel industry separate from the original trade and where a more near approach to completing the article by machinery should be accomplished.

There can be no disputing the fact that wheels so made by persons well educated in all that pertains to a wheel and its

duties, must be superior to those made in the less accurate manner of hand work, the intelligence of the two kinds of mechanics being equal.

It may be said to the prejudice of the machine made wheel in general, that it is the production of a few skilled artisans, assisted by many unskilled, who are more interested in the quantity than the quality of the work they perform, and who are educated only in the technicalities of the parts to which they may be assigned.

If wheels are made under these circumstances by men poorly paid and whose aim is to become mere automatons, rivalling the machinery they superintend, then the machine made wheel is a failure.

The manufacturer must be able to execute each order as an individuality or by the hundreds of sets, but as the question stands today under equal conditions of material and intelligence in manufacturing, the machine made wheel is the better one.

## ACACIA KOA

We have only one cabinet wood here in Hawaii that is merchantable, a species of mahogany, says J. S. Bailey, in *Wood Worker*. Its botanical name is "Acacia Koa," the latter being its native name. It is found on all the larger islands of this group, with variations of color and grain, due more to the soil it may grow in than any distinction of species.

Koa grows in scattered trees, often very large, 6 feet in diameter being not uncommon, but such trees are so unmanageable they are not cut.

Pieces of burl koa, when polished, show the greatest beauty in color and grain. There is nothing like it, no wood to compare. You can get grain with hair-like ripples, waving and curling, or with tints of reds and browns, that lie overlapping each other, to be revealed to you in new beauty each way you turn it to the light.

Koa is a joyous wood, not somber, like the dear old black walnut, fine wood as it was. The stored-up sunshine of the tropics is flashed back to you, toned to a color, a golden, many-shaded brown, a very dream of natural painting not to be matched, or adequately described.

Considering koa as a lumber it is fine. It saws, planes, takes glue, and is a real cabinet wood that gives you back in beauty all and more than all the time and skill you devote to working it. It possesses strength as well as other desirable qualities, and can always be planed smooth one way of the grain. It seasons and dries out slowly, without checking. Piled at all fairly, it does not twist or warp, which shows it to be a wood of even density. It also polishes fine when well filled. We dry it more or less artificially in the upper part of the factory, under an iron roof, where it is too hot most of the day to work.

There is quite a lot of koa on the various islands, more or less accessible. So far it has not sold very well in the states. You should not color koa; to stain it is to paint the lily and gild the rose. Its beauty, unadorned, is more to be desired than all the finisher's art can give. It would be an embodiment of sunshine to you northern folks, who are used to mahogany so disguised by dragon's blood that I have to look twice to be sure it is not my old friend, birch. Koa should be hand polished by filling and shellac, carefully rubbed down to a film. No heavy coats of varnish, but a very light coat of the finest varnish, rubbed and polished, would be suitable.

## PURE AIR IN WOOD SHOPS

Cotton manufacturers have long since recognized the commercial value of clean, pure air in their mills. It remains for the woodworker to follow their example and derive a corresponding benefit from using air which is not loaded with impurities that militate against perfection in woodworking and

finishing and which lessen the efficiency and lives of the workmen.

Beyond the least shadow of a doubt, the one greatest enemy of man—both as regards efficiency, quality of work done, yes, even of his life—is dust. It carries more disease germs than all the flies and rats combined. Microbes find in dust a welcome hiding place and dust spoils more fine work in the varnish room than any other cause known to man. Yet the remedy is known, it is easily applied, and it is not costly.

### ABOUT SHIPMENTS AND FURNITURE AT ATLANTIC CITY CONVENTION

The Eldredge Express and Storage Warehouse Co. have agreed to deliver all freight shipments from the tracks of the railroad companies to the exhibitor's booth on the pier, and at the close of the exhibition to return the goods to the railroads, at the following rates:

Consignments weighing over 300 pounds, round trip, per net ton .....	\$6.00
Consignments weighing over 300 pounds, one way, per net ton .....	3.00
Consignments weighing under 300 pounds, round trip, per net ton .....	1.00
Consignments weighing under 300 pounds, one way, per net ton .....	.50

Payment for delivery as above should be made direct to the Eldredge Express Co.

All shipments must be fully prepaid and notice of shipment should be sent to the Eldredge Express Co., 110 N. South Carolina avenue, Atlantic City, N. J.

Joseph L. Shoemaker & Co., 926 Arch street, Philadelphia, will furnish furniture at the following prices, they having a branch store in Atlantic City that attends to convention wants:	
3-foot golden oak roll-top desks, @.....	\$6.00
4-foot golden oak roll-top desks, @.....	7.00
4-foot golden oak flat-top desks, @.....	6.00
Golden oak revolving desk chairs, @.....	2.00
Golden oak arm chairs, @.....	2.00
Golden oak side chairs without arms, @.....	1.00
Golden oak 6-foot tables.....	5.00
Golden oak 5-foot tables, @.....	5.00
Golden oak 4-foot tables, @.....	2.50

In case the exhibitors would prefer mission furniture to the golden oak, add 50 per cent. to these prices.

The above prices include delivering and setting in space, and removing after the exhibition is over.

Where rugs are desired, domestic Oriental design rugs will cost 15 cents per square foot, and imported Oriental rugs 25 cents per square foot.

This information is for the exhibitors, the Association having no further interest in it.

### WHERE BODYMAKERS GET A MINIMUM WAGE

Factory inspectors are sometimes ignorant of law. One carriage builder in Victoria was recently informed by the inspector that he was acting illegally in employing bodymakers doing piecework. The carriage builder was not to be bluffed, and asked the inspector to refer the matter to the Chief Inspector of Factories, who replied that so long as an employe earned at piecework an amount equal to the minimum provided by the Board, there was no breach of the Factories' Act.—The Australian Coach Builder and Wheelwright.

### WEST AUSTRALIA TO GUARD FOREST

Owing to the great abundance of hard wood timber growing in the southwest of western Australia, the question of afforestation has perhaps not received due consideration.

Now, however, that the development of the state is proceeding, and that consequently fresh areas are continually being

cleared, the government has decided that the reserves of forest areas are to be increased, and it is understood that this is but the beginning of a general system of classification which has been undertaken.

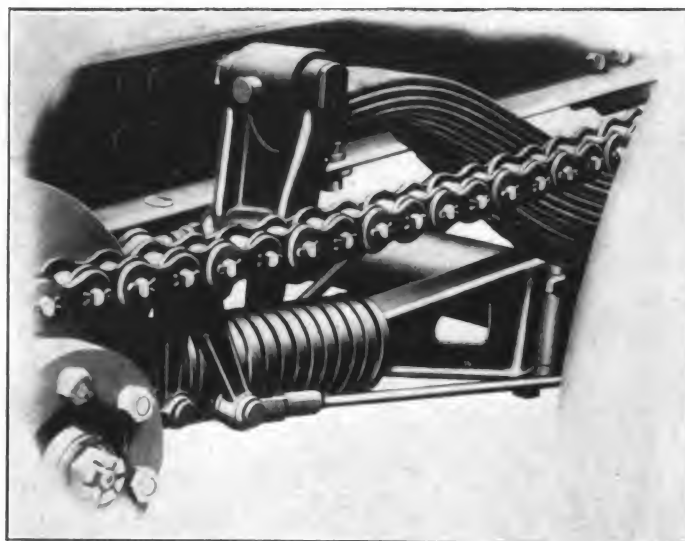
### EXAMPLES OF VELIE COMMERCIAL WORK (See Illustrations)

The two illustrations of Velie trucks, made by Velie Motor Vehicle Co., of Moline, Ill., are interesting.

The Velie rear axle is a 4-inch solid round section, giving increase in strength. Dual tires, 40 x 5 inches fitted to wheels having 3-inch square spokes, gives the Velie a rear wheel and tire assembly not found on other trucks of equal rated capacity.

The rear springs on the Velie truck are hung outside of the frame instead of underneath. The Velie method lowers the center of gravity of the truck 6 inches, and at the same time locates the springs nearer the wheels, and consequently removes the load from the center of the axle and throws it nearer the wheels.

The power plant of the Velie truck is carried on a 4-inch sub-frame which insures the transmission system of being in perfect alignment at all times. This sub-frame is arranged in such a way that the motor may be pulled out of the truck bed



to the front by merely removing the radiator and unbolting the front cross member.

Truck radiators are usually supported by some contrivance fastened to the side of the radiator jacket to give it a so-called "spring support." The Velie radiator is hung in a cradle extending clear around the radiator base which is also supported by coil springs and no movement of the frame, however severe, can be transmitted to the radiator itself.

The strut rods on the Velie truck are built in two telescoping sections which are separated by heavy coil springs. By this design all the severe shocks coming from sudden starting or stopping, or unusual strains encountered in heavy road service, are absorbed by the springs.

### KNOX CHEMICAL VERSUS GERMAN FIRE WAGON (See Illustrations)

Through the courtesy of the Knox Automobile Company, of Springfield, Mass., we present illustrations of the Model M hose and chemical wagon, for purpose of contrast with a German fire apparatus wagon, which is a type abroad. It will be noticed that our practice is to get at the fire promptly, while the German plan seems to comprehend a wrecking appliance outfit as well as a fire extinguisher.



# Paint Shop.

## IDEAL PAINT

What are the properties we should look for in an ideal paint vehicle or medium? First of all, freedom of working whilst in the liquid condition, and secondly, ability to change fairly rapidly on exposure to the air to a perfectly durable film which should possess the following characteristics:

1. Elasticity—to enable it to follow the expansion and contraction of the painted surface on variation of temperature without rupture even when applied to such a surface as metal.
2. Hardness—to enable it to withstand mechanical injury.
3. Perfect impermeability to moisture and gases—to enable it to protect the painted surface from the effect of frost, corrosive agents, and so on.
4. Great chemical stability and inertness—to enable it, not only to resist attack by the same agencies itself, but to remain indefinitely without suffering any internal or external chemical change.

If we could fulfill all these conditions we should be able to produce a perfectly durable paint, but of course we must take as our axiom to start with the fact that such an ideal material is impossible of realization, and our problem is to attain the best compromise we can between these various requirements, which in many ways are conflicting.

Ease of application is, to begin with, to a certain extent incompatible with durability; an enamel, containing a certain amount of hard resin, forms a far harder and more durable coat than a paint in which the vehicle consists simply of linseed oil thinned perhaps with turpentine, but is much more difficult to work with, and therefore inevitably results not only in a greater cost of application, which is an influencing factor in many cases, but also in the impossibility of employing it in many cases when its use would be most desirable.

I think we must all be agreed that linseed oil is very far indeed from being an ideal paint vehicle, says the gentleman who delivered this address recently in London. It has very excellent working qualities, but is in many ways subject to decay. In the first place we cannot get away from the fact that the very property which enables it to be used as a paint vehicle, namely its "drying" power, is really the first stage of disintegration. We all know that the conversion of the liquid oil into a hard lustrous solid when it is exposed to the air in a thin film depends upon the fact that the oil contains an unsaturated organic acid, which is capable of absorbing oxygen, and changing into a more complex substance, and we must bear in mind that this oxidation is progressive.

My point has been so far to show that the durability of oil paint is intimately connected with its drying power, and if you concede this point you will concede also the fact that the durability of paint is intimately connected with the employment of driers. I am not going to contribute any remarks on that.

Professor Baly has come to the conclusion that the painter should taboo driers altogether. I am quite with him in theory, on the principle that the more slowly a paint dries the more durable it will be, other things being equal, but, unfortunately, other things are far from being equal. Rapid drying is, in many cases, imperative.

The most serious factor in the decay of paint, however, is the fact that moisture can actually penetrate through the film, which by no means answers to the requirements of impermeability (as has been frequently demonstrated), and is, therefore, a by no means efficient protection to the surface it covers against this most serious agent of destruction. This is perhaps the most vital defect in oil paint, for the actual disintegration of the film can be met by repainting, but if the film is

porous to moisture the surface beneath it is not efficiently protected, however durable the film itself may be.

I must say a few words now on the two other factors in the life of a paint—the influence of the pigments and the surface to be painted on—the durability of the vehicle, for that is really what it amounts to. It will, in the first place, be obvious that pigments which have an influence on the drying of the oil—such as earths containing manganese—must have an influence on the durability of the paint, which is notoriously the case. The use of a brown paint containing umber in situations exposed to much air and sun, has proved disastrous many a time. The effect of such pigments must always be taken into consideration in connection with the principles involved in the drying process.

My idea is that all pigments are equivalent as far as the durability of the paint is concerned—provided they are chemically stable and chemically inert.

I know perfectly well that it is strenuously denied that the action of white lead on the vehicle is beneficial. In fact, I have been shown practical tests at different times, which proved conclusively that every white pigment known produced a far more durable paint than any other—the one that came out top, of course, being each time the one that the man who made that particular test was interested in.

The most frequent trouble arising from the painting ground is, however, the presence of moisture, as in damp or unseasoned wood, which evaporates in warm weather, either breaking the oil film or throwing it off in the form of blisters. I will not dwell upon this side of the question, however, for the point you will be wanting to get at is not so much the explanation of the various defects in ordinary oil paint, but how to mitigate them and increase the life of a paint, and I may say at once that that is just what I want to hear you talk about. Candidly, I think there is yet a very great deal to be learned on the points I have touched upon, and the way to learn it, in my opinion, as I have already hinted, is for practical exposure tests to be made on a large scale and under scientific direction by a committee representing all interests. This is really the only way to settle finally such questions as to whether there really is anything in the idea that white lead is superior to other white pigments as far as the durability of the paint is concerned, upon which we all disagree.

We have also to consider the possibility of replacing linseed oil by some other vehicle which answers more closely to the ideal requirements I have suggested. Many such alternatives are actually being used at the present time, such as Soya Bean oil, Menhaden oil, etc. Personally, I am very skeptical as to whether any other saponifiable will prove more durable than linseed, or even that any of these "newer paint materials" will prove anything better than cheap substitutes, but that again is a question not for talking, but for organized practical experiment.

A further point which I can barely touch upon is the question of the variation of the composition of the paint in successive coats, which would seem the only way to obtain the maximum durability with an oil medium. For instance, it seems to me in theory sound practice to prime woodwork with a hard drying paint such as red lead, so as to ensure a hard surface for further painting, as this priming is, to a large extent, protected from oxidation by the subsequent coats, which should, of course, be slower in drying.

One cannot doubt that the most efficient way to secure the durability of oil paint is to seal it from further oxidation as soon as it has hardened by means of an impervious varnish. The difficulty in this, of course, lies in finding a suitable varnish which will combine the necessary impermeability to gases and

moisture with the equally necessary elasticity and hardness; an oil varnish is excellent as regards the latter qualities, but has the defects of oil itself as regards permeability; on the other hand a spirit varnish, although quite impervious, is brittle, and will not withstand mechanical injury. One can only suggest sealing the paint with an impervious coat of spirit varnish, and protecting that again by a coat of tough oil varnish, the spirit varnish thus acting almost like the damp course in a house or the clay center in a dam.

### COLORS FOR BACKGROUNDS AND LETTERS

The following list of colors for backgrounds and letters is designed mainly with a view to ordinary sign work, but it will contain hints for lettering on vehicles:

Dark Backgrounds:	Letters.
Black—	White, golden yellow.
Dark blue or dark green—	White, straw color, golden yellow, light grey.
Dark red or maroon—	White, straw color, flesh color.
Light Backgrounds.	Letters.
White—	Black, dark blue, dark green, dark red.
Straw color—	Black, blue, green, red, deep golden brown.
Lemon yellow—	Black, dark blue, dark green, dark red, brown.
Flesh color—	Black, dark blue, dark green, dark red, brown.
Light blue—	Black, dark blue, dark green.
Light green—	Black, dark blue, dark green.
Light yellow ochre—	Black, dark blues, dark greens, browns.

### SUMMER IN THE PAINT SHOP

The trying season of the year for the painter approaches. It is the one time when the giver of advice has been most profuse in his counsel. It is the time when the painter has most to excuse in his work and the boss most to object to in the kind of work coming out of the paint shop. But both have recognized that it is a condition, not a theory that has confronted them.

The birth of the automobile has been the cause of aggravating a state of affairs that was always annoying. Its dirt, its greasiness, its hard usage at the hands of the owner or driver have injected into its painting and varnishing problems that were passed up to the varnish maker, and they have made him pause and consider.

But obstacles are made to be overcome. There seem to be no other reasons for their existing at all, unless we rechristen them a nuisance.

The under body of the carriage was always the part to stand the brunt of hard service, but it was a simple proposition compared to the under body of the automobile, the chassis. There was nothing but very frequent refinishing that would keep its dirty face clean, if we may use such a nursery expression. No self-respecting varnish of the old school, if such a term is allowable, would stand for the greasy and soapy cleanings without losing its own shining countenance. And varnish is not varnish if it does not persistently keep up a glistening respectability.

The varnish chemist, the practical varnish melter, in fact every one in a varnish factory addressed himself to the new problem. Something had to be done. Something was done. The unexpected came to pass. A varnish has been evolved that more than meets conditions, and puts the painter's former excuses where the mould of disuse hides their former bare-faced perversity. We refer, of course, to the Valentine Vandadium Chassis Finishing Varnish, such a remarkable product in its results where its use is indicated, that it becomes a

matter of simple news to speak about it in print, and an article those writing about varnish cannot afford to neglect.

In this comparatively new product we have a varnish that is a marvel as a quick drier. It dries free from dust in a few hours, and two days is sufficient to harden it ready for the severe usage to which it is put. Its surface takes on the hardness of a baked finish almost, and its brilliancy is an outstanding feature. What seems strange is the fact that it also maintains qualities of elasticity. Opposites, or what have always been thought opposites, have been blended harmoniously and with success. It works and flows with the utmost satisfaction to the painter, also. The workshop of the varnish chemist has become the arcanum of the magician these days. We are in a new era.

### MORE ABOUT GLUE

Glue should always be purchased upon test—and coal should be purchased in like manner. The woodworker who does not purchase coal, glue, oils, varnishes and some other articles in that manner is not doing as he should. Ten to one, he is losing money by not purchasing all those commodities "on test."

But if glue is to be purchased according to the result of some tests, what are those tests, and how are they carried out? What must be done to a lot of glue in order to determine, without guessing, just what that lot of glue is worth to the woodworker?

There are at least ten tests to which glue should be subjected, says John Scott in *Wood Worker*. The one used by the workman, as above noted, is the first test. That one is good as far as it goes, but it doesn't go half far enough. The ten tests to which glue should be submitted are as follows: A close inspection; measuring moisture; analyzing the ash; noting the odor; acid or alkaline; grease test; viscosity test; the jelly strength; the joint strength, and the spreading quality.

A number of these tests can be carried out with very little apparatus. Others, like the ash analysis, cannot be done without instruments and chemical knowledge. The examination should be to see how the glue breaks. If the surface is free from bubbles—dry glue—and breaks evenly and glossy, it is good. The thinner the sheets (cut), generally, the better the glue. Reject the glue which smells putrid or has some other bad odor. The best glue smells good enough to eat!

Glue should be neither very acid nor very alkaline. Neutral is best.

To test for grease—and that substance is always damaging when present in any considerable quantity—drop a little soluble aniline on a brush full of glue, wipe the brush in circles upon a bit of paper, then suddenly draw the brush across the paper and see if there are any white spots left in the path of the brush. White spots mean the presence of grease, and the more spots counted, the more grease.

To test the viscosity or "body" of glue, it is permitted to run through a certain sized hole at a temperature of about 150 degrees Fahr. Solutions for test should always be made of 25 parts dry glue in 100 parts (by weight) of pure water at the temperature named. The instrument is rated by noting how long a time is required for a certain quantity of water to run out, then the glue is tried and the time of each sample noted. High grade glue is much thicker than poor glue.

The jelly strength of glue needs special apparatus. The foam test may be made by stirring some glue with an ordinary egg beater for half a minute and then noting the percentage of foam. If the foam is permanent, the glue might be better.

The joint test as usually made—whereby two boards are glued together and then pried apart with a chisel—is absolutely worthless. The joint test should be made on oak wood, glued together endwise, and then pulled apart in a testing machine and the stress noted in pounds.

The spread test consists in determining the amount of dry glue necessary to cover a given area of wood. This test is favored by veneer workers. To make it, use a certain amount of dry glue dissolved in the same amount of water for each

test and used at the same temperature with the wood heated to the same degree every time. Then note the number of square feet of surface the glue will cover.

When it is known that glue will be accepted upon the viscosity test alone some dealers and manufacturers seem inclined to "load" the glue by adding substances which increase the viscosity but do not add to the value of the glue.

To detect the "loading" of glue, dissolve one part of dry glue in four parts (by weight) of water, by soaking for at least 24 hours therein; then bring the weight up to 17 parts, by adding grain alcohol. The mixture, after thorough stirring, may be allowed to settle, the residue is then filtered, and well washed with alcohol and water, one part in three. After being dried out, the residue is weighed, and its percentage, compared with the original weight of the glue, is the amount of loading and other nongelatinous and worthless material in the glue.

By putting the glue through as many of the above tests as possible, the user will certainly know a whole lot more regarding a certain sample than he would if the foreman merely looked at the glue, and then "guessed" at its quality.

### TO PAINT GALVANIZED IRON

Very few paints seem to adhere to galvanized iron. A prominent chemist has said that red lead gives best satisfaction of any paint as a first coat for this class of work. It is found that a wax solution added to the unmixed red lead paint prevents scaling and cracking, as it tends to prevent cracking resulting from contraction and expansion of the metal. The formula for the wax solution is: Melt a cup of beeswax and when it reaches a thin fluid, pour it into a gallon of raw linseed oil heated to 200 degrees F. For use, add one quart of the solution to every 100 pounds of mixed red lead paint.

### GLUE VARNISH

This varnish may be called "glue size," but it is more than "size" because it is waterproof and protects the surface the same as varnish does. To make it up select a glue with a color same as required for the varnish. That is, for white varnish select white glue, and for pure white the best gelatine. For darker work use a darker grade glue. Brown glue will give a dark varnish.

Dissolve the glue in twice its weight of water and waterproof it by adding 1½ ounces of bichromate of potash to each gallon of water put into the glue. Don't add the potassium until just before the varnish is to be used. The action of the potassium is to make the glue insoluble. After it has been mixed with the potassium and dried out it cannot be dissolved. It works well where iron, wood and leather have to be coated with it.

### UNITED STATES RUBBER COMPANY INCREASING ITS CAPITAL STOCK

Although the United States Rubber Company, through the United States Tire Company, is operating four large tire plants at the present time, plans are under way for the erection of still another plant. Announcement to this effect has been made by President Samuel P. Colt, of the United States Rubber Company, in connection with a plan to increase the capital stock of the company from \$75,000,000 to \$120,000,000. The factories operated by the United States Tire Company at present are located in Hartford, Conn.; Detroit, Mich.; Providence, R. I., and Indianapolis, Ind.

"The proposed new factory," says J. M. Gilbert, general manager of the United States Tire Company, "will increase our output about 5,000 tires daily. At the present time, by working three eight-hour shifts in all of our plants, and utilizing every available bit of our equipment, we are barely able to take care of the trade. The number of cars in operation is increasing every year, consequently the demand for tires is bound to be greater. To meet this demand it is necessary that we should

increase our output, hence the proposed new factory. All I can say at this time is that this plant will be the largest of its kind in the world and that it will be equipped with the most modern machinery known to the industry."

### WHAT THE MERGER OF THE GOODRICH AND DIAMOND RUBBER COMPANY INVOLVES

The merger of The B. F. Goodrich and Diamond Rubber companies involves the consolidation of the manufacturing ends of these plants, the amalgamation of the sales departments in the various branch offices, and the hearty co-operation and united efforts of the management of each of the old companies. Taking into consideration that both of the plants from their inception have been organized upon the best business lines, that the buildings have been erected upon broad lines, and for the purpose of manufacturing various rubber goods, and that the two plants are located side by side with only a fifty-foot street between, that the side tracks and transportation facilities have been used in common and that the training of many of the factory foremen and workmen has been given in one shop and used in another, it is easily seen how, within a short time, the two factories will become one unit, with over 10,000 factory employes working to a greater advantage than before.

The amalgamation of the sales departments in the various branch offices will evidently be an evolution rather than a revolution, taking some time. It is known to most Akron residents that the men in the branch offices and factory offices have all the work they can do, and it is very difficult to secure good men to take the important positions held in the sales departments, both in Akron and in the branches; so that as many men, if not more, will be employed in the sales departments as were employed before, and new sales branches and sub-stations will no doubt be established, thus making room for men who will lose positions as heads of the branch offices. At the same time, says a resident correspondent in the *India Rubber World*, where two branches are consolidated, the amount of business carried on will not be lessened, but increased. The volume of business will be greater, and consequently the number of people to take care of it must be greater. This company is actively pushing forward its foreign trade, and needs experienced help to handle the business in foreign countries. The hardest proposition for a rubber manufacturer is to secure capable men to fill the important positions, and the sales department is one of the hardest for which to secure them.

The Goodrich and Diamond companies have been fortunate in securing some of the most successful business men and rubber experts. The personnel of the new organization will represent some of the strongest talent in the rubber world. Bertram G. Work will be president. His father, Alanson Work, was one of the founders of the Goodrich company. Bertram G. Work is a graduate of Yale. After his graduation he learned the factory end of the rubber business. Starting at the bottom of the ladder, he worked in all the departments of the factory. Securing a thorough knowledge of this business, he was made general superintendent in 1892, and served in that capacity until 1902. He was then elected vice-president, and filled that office until 1907, when he was elected president. The magnificent growth of The B. F. Goodrich Company has been under his administration, and is largely due to his efforts.

A. H. Marks will be vice-president and general manager of the new company. He is a Harvard man. He was chemist for the Boston Woven Hose and Rubber Co. from 1895 to 1896, and chemist of the Revere Rubber Co., Boston, in 1897. In 1898, in company with W. B. Miller, he became identified with the Diamond Rubber Co. With them were W. B. Hardy and A. H. Noah. Under this organization the Diamond Rubber Co. has had its wonderful growth. Mr. Marks was president of The Alkali Rubber Co. His organizing ability and his knowledge as a rubber expert have given him the soubriquet, "Wizard of the Art."

E. C. Shaw, a Yale man, will be one of the second vice-presidents and works manager. Mr. Shaw is an engineer of high standing, and an organizer of much experience and ability. He has been identified with The B. F. Goodrich Co. since 1895.

H. E. Raymond, sales manager of The B. F. Goodrich Co., and W. B. Miller, who held the same position with the Diamond Rubber Co., will have charge of the sales department of the new company. H. E. Raymond will have the title of second vice-president and sales manager, and Mr. Miller that of second vice-president and assistant sales manager. Mr. Raymond has been closely identified with The B. F. Goodrich Co. for years, having successfully officiated in several capacities, and the great volume of trade, the thorough manner of covering the rubber field, both national and international, by this company, are attributed largely to the untiring efforts of Mr. Raymond.

W. B. Miller in 1898 was assistant manager of The Revere Rubber Co. Since that time he has been connected with the Diamond company. It is said that he entered the Revere company as an office boy, and later became salesman, and in fifteen years became assistant manager. Mr. Miller's experience, generalship, knowledge of men and salesmanship, have made The Diamond Rubber Co.'s selling force the compact and efficient power for business that it is today.

C. B. Raymond, secretary of the new company, has been connected with the Goodrich company for many years. His experience and ability have thoroughly equipped him for the duties of this new position.

W. A. Means, treasurer of The B. F. Goodrich Co., will be treasurer of the new company. He is a financier of large experience, and has been with The B. F. Goodrich Co. for some time.

The other officers of the board will be F. A. Hardy, chairman of the board; F. H. Mason, vice-chairman of the board, and G. E. Norwood, assistant treasurer.

#### Statement of The B. F. Goodrich Co. of New York, and Subsidiary Companies.

The following is the consolidated balance sheet showing the position of the company as at April 1, 1912, after the issue of its capital and the taking over of the assets and liabilities of The B. F. Goodrich Co. of Ohio and the Diamond Rubber Co. of Ohio:

Real estate, buildings, plant, machinery, goodwill, patents, etc., less unmatured purchase money mortgage of \$30,000.....	\$72,325,188.42
Investments in Other Companies.....	1,650,236.89
Stock in Treasury.....	266,990.38
Current Assets:	
Inventory of materials and supplies, goods in process and finished products, partly estimated	\$17,776,579.76
Trade accounts receivable less reserves for bad debts, discounts, etc. ....	5,035,571.22
Other accounts receivable.....	1,791,581.29
Bills receivable .....	463,037.05
Cash in banks and on hand.....	1,390,738.25
	26,457,507.57
Prepaid insurance, interest, etc., chargeable to future operations .....	177,681.20
	\$100,877,604.46
Capital Stock:	
600,000 shares of common stock of \$100 each.....	\$60,000,000.00
300,000 shares of 7 per cent. cumulative preferred stock of \$100 each .....	30,000,000.00
(Redeemable in case of dissolution, liquidation, merger or consolidation at \$125 per share).....	\$90,000,000.00
Surplus .....	2,200,000.00
Current Liabilities:	
Bills payable .....	\$4,310,665.23
Accounts payable .....	1,173,811.75
Sundry accruals .....	153,542.98
The B. F. Goodrich Co. of Ohio	937,684.98
The Diamond Rubber Co. of Ohio	850,000.00
	7,425,704.94
Miscellaneous Reserves .....	1,251,899.52
	\$100,877,604.46

The combined profits of The B. F. Goodrich Co. for the period from January 1, 1908, to December 31, 1911, and of The Diamond Rubber Co. for the period from October 1, 1907, to September 30, 1911, after charging all expenses of manufacture and management and selling expenses, but before providing for Depreciation of Property and Plant, and the combined gross sales, were respectively as follows, including in each instance the operations of the Goodrich Company for the calendar year and of the Diamond Company for the fiscal year ended September 30.

	Profits.	Gross Sales.
1908 .....	\$4,615,098.42	\$22,580,107.63
1909 .....	8,063,146.60	32,087,854.03
1910 .....	6,384,059.56	45,800,534.93
1911 .....	7,805,312.48	48,528,112.01

the Profits being equal to an average per annum of \$6,716,904.26.

#### THE DUKE OF CONNAUGHT'S FAMILY SLEIGH

The Ledoux Carriage Co., Montreal, Canada, has made a sleigh for the use of the Governor-General of Canada and family. Its general outlines are shaped like a sociable, except



that there is no folding head to the hind seat. There is a high driving seat, and the usual curved dasher and scrolled iron underworks, to which the runners are attached.

#### AUSTRALASIAN COACH BUILDERS' ANNUAL CONVENTION

The tenth annual convention and exhibition of the Carriage and Wagon Builders' Association of Australasia, presided over by President J. Westcott, was held at Sydney, New South Wales, Australia, April 4 to 10, 1912. Representatives of the vehicle industry were present from all parts of Australia, Tasmania, and New Zealand.

The attendance was large, many of the members bringing their wives. The show held in connection with the convention was a great success, and the dinner was one of the largest functions ever held in connection with the vehicle trade in Australia. A feature of the convention was a steamboat ride to points of interest around the famous harbor of Sydney.

There was some discussion upon the meaning of the word "gallon" as applied to varnishes coming from the United States. The Australian gallon (the imperial) contains about one-sixth greater capacity than the one in use in America.

A committee was appointed to draw up a suitable cost sheet. Hobart, Tasmania, was chosen unanimously for next year's meeting. Fred. Paine, Launceston, Tasmania, was elected president for the ensuing year.

#### POLE FACTORY FOR OMAHA

The Gate City Manufacturing Company is a new concern that will start business at 1108-10-12 Nicholas street, Omaha, Neb., about the first of July. It will manufacture high grade vehicle poles and patent truss rod supporting surries.

# Automobile Department

## HOW A COMPRESSED-AIR STARTER WORKS

The mere name compressed air undoubtedly conveys to the mind which is in any way infused with mechanical matters, a general conception as to the principle embodied. There are other matters, such as the method in which the pressure is generated, its control, and the system by which it is conveyed to the right spot at the right time and in the right manner, in which every one may not be quite so well versed as the exigencies of the case demand at the present time, when the subject of self-starting engines is undoubtedly one of paramount importance.

Primarily, if one is going to force an engine to revolve by means of compressed air, it is obvious that there must be a reserve of compressed air somewhere handy. For this purpose a fairly large castiron or steel tank is carried in the rear part of the chassis, attached to the main frame or other suitable place, and in this tank a supply of compressed air is contained. The pressure depends, to a large extent, on the size of the engine and the compression in the other cylinders, and also on the flywheel weight, friction of the moving parts, etc. One may safely assume that the pressure is always arranged with a fair margin in excess of that which is absolutely needed, and for the sake of argument we will assume that the pressure is normally maintained at 300 pounds to the square inch. It is equally obvious that the pressure has to be provided from somewhere, and that the tank can be replenished, and for this purpose, at the forward end of the engine, is arranged a small air-cooled plunger-type pump, which is driven from the crank shaft by means of a small eccentric. In order to maintain absolute smoothness in the running of the engine at high speeds it is requisite to balance the couple set up by this eccentric and pump, but this is detail with which the designer of the engine is solely concerned. This small pump is arranged to be cooled by vanes cast on it in a similar way to a motorcycle engine, and is lubricated in any suitable manner: for instance, by splash from the engine. Through the medium of this pump the air is drawn in past a gauze screen and forced through a non-return valve to the storage tank, and although the bore and stroke of the pump may only be, say, in the regions of 25 mm. by 25 mm., in a short time the large tank is filled with compressed air at a pressure of 300 pounds to the square inch.

Personally, if I were building a chassis with a compressed air self-starter, I should so arrange the pump that it would automatically become disengaged from the driving medium at any desired pressure, and also automatically reengage when the pressure fell below the predetermined limit. Thus the engine would never be called upon to do unnecessary work. As at present arranged, however, this super-refinement has not been found necessary, and when the required pressure is attained the pump still goes on working, although only raising and compressing a small quantity of air, and always the same identical quantity, and in practical experience this has not been found to detract from the system.

With a given stroke and a given compression area, the piston, when moved from the bottom to the top of its movement, will compress the air drawn in on the suction stroke up to a certain limit. Call the said limit 80 pounds to the square inch for the sake of argument—and do not worry about leakage past the rings or anywhere else. Now, just so long as that piston draws its charge of air from the atmosphere, or from any source where the pressure does not exceed atmospheric pressure, it is fairly patent that the pump can never exert a greater pressure than 80 pounds to the square inch. In other words, it draws in a certain quantity of air (which quantity

remains constant) into a certain space, and compresses it into a certain smaller space—always the same smaller space, and, therefore, always to the same pressure.

Now then, take the air compressor for the self-starter. Arrange the compression space to be so small (comparatively) that the pressure generated at the top of the stroke is 300 pounds to the square inch, or as the case may be. Now imagine any type of non-return valve in the head of that cylinder and connected to the storage tank. Then so long as the pressure in the storage tank is beneath 300 pounds to the square inch, the pump will continue to pass its charges of air into it. But when the pressure in the tank is 300 pounds to the square inch it equals the maximum pressure which the pump can exert, and, therefore, the pressures on each side of the non-return valve-balance, and obviously no more air passes. Therefore, the air compressed in the pump expands on what should be the suction stroke, and, consequently, the inlet valve (automatic) does not open, and the same identical quantity of air is recompressed and recompressed until such time as the tank pressure falls below 300 pounds to the square inch, when the pump automatically and instantly commences to recharge it. Simple, sure and neat!

We now see, then, how the pressure is maintained in the tank, and can, therefore, pass to the next point, which is as to the means in which the said pressure is utilized for starting the engine.

Assume for the moment that No. 1 piston has come to rest just at the commencement of the firing stroke: that is to say, both valves are closed, and the piston is just about to start its downward stroke. If, then, we bring a pipe charged with compressed air from the storage tank to this cylinder, and let the air in at a pretty good pressure, this piston will be forced to descend. At the bottom of its stroke, however, it would be stopped if the air continued to come in, and, therefore, besides merely letting the compressed air into the cylinder, it is seen that it is requisite to control its entry, and also the time at which it stops entering. We see, then, that if we bring pipes connecting the four cylinders (assuming, of course, a four-cylinder engine) to the pressure tank, and find a suitable means of permitting the compressed air to pass only to the cylinder which is on its firing stroke, and to stop entering that cylinder when the firing stroke has nearly finished, and then in turn to enter the next cylinder as it starts its firing stroke, we have a means of causing the engine to revolve.

What is required, then, to effect this control of the inlet of the gas into the various cylinders? Obviously, some type of valve mechanism, and the simplest one is the plain rotary disc valve, with a single slot in the revolving disc, arranged to register with the four slots on the face of the valve, the latter slots connecting to the different leads of the pipes to the respective cylinders.

Now think it out, and it is patent that the valve under consideration has to be set with the engine, and, therefore, it has to be driven from the half-speed shaft, so that the two systems of valve mechanism register together for effecting their respective functions. Obviously, it would be no use sending up compressed air to the cylinder whilst the inlet valve was open, and so it will be seen that it is necessary for this disc valve to be positively driven and timed with the cycle operations of the engine.

Then the distributor valve has to be mounted in some suitable way, and, of course, the arrangement of the camshaft is likely to be the determining factor in this respect. Then comes the control mechanism, which is usually mounted on the dashboard.



## WEAR OF TWIN SOLID TIRES

"Solid twin tires used for the driving wheels of heavy wagons have the disadvantage that the inner tire is always overloaded and therefore wears down considerably before the outer one shows any but superficial signs of service," says Colonel Fritz Listemann, of the German army reserve, in *Der Motorwagen*.

The observation, while doubtless correct as far as it goes, does not include all the facts of interest in the case. It is not stated that the inner tire continues to wear more than the outer one, but only that it does so in the beginning. It stands to reason that, in proportion as the inner tire wears down, the load and wear will shift more and more to the outer tire, and that at some point an equality in wear will be reached. If, then, the two wearing surfaces were from the beginning brought into the relation in which the wear is equal, the disadvantage referred to would probably never come into existence.

The overloading of the inner tire, which the excessive wear brings in evidence, causes also its disintegration and too rapid deterioration, as there is a maximum load for each cubic inch of rubber material which cannot be transgressed without incurring this consequence. Much of the art in tire building lies in so shaping and distributing the rubber that the maximum allowable stresses are at no point exceeded. It might be suggested that the inner tire of twins might be made broader than the outer one, and that equality in wear might be accomplished in that manner without getting the unsightly truncated cone effect which would be the result of a variation in the two diameters. This would be in accordance with the principle of strengthening those parts which show the need of it.

Some nice suggestions spring up at this suggestion. If, for example, the reduced wear of the outer tire is due not to reduced stresses when the tire is in action, but to less frequency of substantially the same stresses, which the inner tire is called upon to sustain it would not be quite correct to reduce the amount of rubber, much less the area of wearing surface, in the outer tire, since it is the intensity of stresses rather than their frequency by which these factors should be determined. And, if it is assumed that the whole observed fact of unequal wear also has some bearing on the wear of broad solid rubber tires of single type, says *Cooper's Vehicle Journal*, a remedy consisting of the broadening of the inner tire would be inapplicable. In the case of the single solid it would simply have no sense. The relations between the inner and outer tire of the pair would then be exactly opposite to those brought about by wear in the wagons of the German army. The remedy would seem to run contrary to the facts, even though it is usually sound practice to fortify those parts which wear most.

Perhaps the explanation is to be found outside of the vehicle itself. Hard roads, which are those which wear most on tires, usually possess the peculiarity of being crowned, so as to shed water readily. Evidently if solid twin tires are expected to wear evenly, they must be in equal contact with the road surface. A perfectly straight-lined surface would somewhat offset the unequal wear previously produced by highly crowned surfaces. There is a question of averages. But in principle it is clear that solid twin tires should preferably conform, when first mounted on the wheel, to the average road crowning curve.

In broad solid tires of the single type the tread profile is usually so strongly curved that even the crowned road surface can scarcely shift the line of maximum stress and wear more than possibly one inch inwardly, and compensation for this inequality could perhaps be provided by building up the outer half of the tire with a little more rubber and a slightly steeper curve.

What happened in Germany after the unequal wear had been ascertained shows that considerable importance is attached to the whole subject. The army authorities requested the tire makers to provide tires in which the unequal wear would not be encountered. A request was made for another type coming nearer to the twin type and giving the security against skidding

which this type affords. It is to be said, however, comments Colonel Listemann, that the inferences from the trial of the new broad single type tire cannot be considered conclusive, as there was no opportunity at the trial for comparison with an equally heavy vehicle fitted with twin tires.

To meet the objections of the army people, however, the tire makers turned out a new type, and this is now admissible for the army wagons on even terms with the original twin tire type of the same width. The new model, while belonging to the single type, has two treads, and that the center lines of the treads are a little closer together than the corresponding lines in the twin tires, so that the road surface curvature will count less strongly for producing inequality in the wear. It also has more material, and the improved cushioning resulting from this feature may also have some bearing on the equalization of the wear. The central groove reaches to the wear limit allowed for army work.

## WORM DRIVE—CHAIN DRIVE

Reports published in this country to the effect that the British War Office, in asking for proposals for motor trucks for use by the army, had specified that the worm drive is not to be used, prove to be out of line with the facts. The British War Office intends to subsidize certain motor trucks in much the same manner as other European countries have done, and because of this subsidy it holds to its right to insist on points in construction that it believes to be best. A part of the erroneous statement published in the United States regarding the British motor truck specifications says:

"These specifications provide for higher engine power and larger driving wheels than is followed in regular practice and prohibit the employment of worm drives."

Copies of the army specifications have been received in this country and they show that it is the chain drive and not the worm type of drive that is prohibited. The clause in the specifications covering this point says:

"17. Hind axle.—The final transmission of power to the rear wheels is to be by means of a live axle in which a bevel drive of approved design should be employed. Chain drive to hind axle will not be permitted."

The worm drive for motor trucks of heavy capacity was introduced in this country by the Pierce-Arrow Motor Car Company, of Buffalo, and one of the causes that led to its adoption was the fact that it had been in successful use in England by several manufacturers for a number of years. Advocates of the worm drive on this side of the Atlantic thought it queer, therefore, that the English army officials should bar it in army trucks. The specifications set the matter right and now it is seen that but one form of final drive is barred completely, worm drives being permissible on trucks of all capacities for army use.

## ELECTRIC BATTERY VEHICLES IN ENGLAND

"The announcement of the opening of a commercial campaign in London by American makers of electric battery vehicles has again drawn attention to the curious difference between the total neglect of this method of traction in the United Kingdom and the enthusiastic multiplication of such vehicles in America," says the *London Times*. "The common explanation that the gasoline drive has been brought to a higher stage in Europe does not appear to be wholly satisfactory; for it is not denied that what is called the 'gasoline truck' is faster and is indispensable for 'long haul business,' and the claims of the electric vehicle are based on its simplicity and economy for town deliveries. In a paper read before a sectional meeting of the National Electric Light Association in Chicago, Mr. R. Macrae assumed that the average daily consumption of energy was 9 kilowatt-hours, at a price of 4 cents per kilowatt-hour, and in the discussion that followed one speaker calculated that if one-half of Chicago's roadway traction were transferred to

the electric battery system the central station revenue from charging would amount to \$4,000,000 a year. Attractive as this business is to the public supply authorities, it is not to be expected that skepticism in that quarter will be quickly overcome. The figures quoted are not at all convincing. At a New York meeting the record of 100 delivery vans of 1,000 pounds capacity was examined, and it was stated that, excluding depreciation, interest, and wages, the best performance over a period was 25 miles per day at a total cost of \$19.57 for 30 days; while the worst was 28 miles daily for a total of \$64.21. It is to be hoped that carefully observed trials will soon be carried out on this side of the Atlantic."

### STANDARD TRUCK WARRANTY

**Does Not Extend to Tires, Ignition Apparatus, Lamps, Tanks, Signaling Devices, etc.**

A uniform automobile truck warranty having received the approval of the National Association of Automobile Manufacturers, the following guarantee will probably be used by all members of the organization and has been recommended to all manufacturers of trucks. The association, in placing its action before the industry, recommends that the warranty be incorporated in all contracts of sale and printed prominently in catalogues and selling literature. The form of the standard warranty is as follows:

"We warrant the new motor trucks manufactured by us to be free from defects in material and workmanship, this warranty being limited to making good at our factory any part or parts thereof which shall, within ninety (90) days after delivery of the truck to the original purchaser, be returned to us with transportation charges prepaid, and which our examination shall disclose to our satisfaction to have been thus defective.

"This warranty shall not apply to any truck which shall have been repaired or altered outside of our factory in any way, so as, in our judgment, to affect its stability or reliability, nor to any truck which has been operated at a speed exceeding the factory rated speed, or loaded beyond the factory rated load capacity, or which has been subject of other misuse, negligence or accident.

"We make no warranty whatever in respect to tires, rims, ignition apparatus, lamps, gas tanks, signaling devices, generators, batteries or other trade accessories, inasmuch as they are usually warranted separately by their respective manufacturers.

"The foregoing obligation to make good any defective parts returned as herein provided is in lieu of all other warranties expressed or implied, and of all other obligations or liabilities on our part, and we neither assume nor authorize any other person to assume for us any other liability in connection with the sale of our trucks."

### THE SECTIONAL TRUCK TIRE PROVES MOST EFFICIENT FOR HEAVY SERVICE

"The question as to the relative merits of the continuous tread and sectional tires," said a representative of the Kelly-Springfield Tire Co., in an interview the other day, "has always been one of considerable speculation among the users of heavy trucks.

"Perhaps," he continued, "the most forcible argument in favor of the Kelly-Springfield sectional tires from the standpoints of efficiency and cost of maintenance are shown by comparing its performance with that of the continuous tread tire when operating under similar load conditions.

"It will be found that any form of continuous tread tire when running under pressure forms a wave or bulge of rubber just forward of the traction surface. When this bulge of rubber is compressed hard enough the wheel is forced to jump or skip

and allow it to slip back, otherwise the tire would have to creep on the rim.

"This constant kneading of the rubber not only causes heat which is detrimental to the tire, but causes excessive wear on the base which lessens the life of the tire by depriving it of its resilient qualities.

"These objectionable features are entirely eliminated when the sectional tire is used, as the space between the sections allows for all lateral expansion. Each block or section of rubber being separate and independent, excessive heating is avoided and the tires are in a measure air cooled.

"Another important feature offered by sectional tires is that because of their irregular traction surface they do not skid and can be used for heavy duty in the twin form, thereby assuring greater traction power than any other type of tire.

"Owing to the fact that these tires are made up of independent blocks, any one of which can be taken off and replaced without interfering with the other blocks composing the tire, the cost of repairs is reduced to a minimum. Thus a permanent repair may be made on the road by anyone, even if mechanically unskilled. This, of course, is impossible when a continuous tread tire becomes damaged or worn.

"It is because the sectional tire has reduced the cost of maintenance to a minimum that makes it appeal strongly to the users of heavy trucks when the item of tire expense runs into a considerable amount of money."

### DATES SET FOR BIG RACES

The ninth race for the Vanderbilt Cup will be run at Milwaukee, Wis., on Tuesday, September 17, and the fourth renewal of the international classic, the race for the Automobile Club of America's gold cup, the Grand Prix, will be decided over the same course on Saturday, September 21. The first contest for the Pabst Blue Ribbon trophy, a \$10,000 gold cup donated by Col. Gustave Pabst, millionaire Milwaukee brewer, will be run co-incidentally with the Vanderbilt, and the initial race for the Wisconsin Motor trophy, a \$2,500 cup donated by the Wisconsin Motor Manufacturing Company, of Milwaukee, will be run with the Grand Prix.

The dates were decided upon following a conference between representatives of the Milwaukee Automobile Dealers' Association and William Schimpf, chairman of the contest board of the A. A. A., at Indianapolis on Memorial Day. The course selected by the M. A. D. A. was also approved, subject to further viewing by the A. A. A. representatives and approval by the A. C. A.

The Greenfield course, which has been selected for the running of the classics, will, when reconstructed, measure 8.7412 miles, according to the official survey made recently by William Hughes, official surveyor. The roads comprising the course at present measure about 9.9 miles, but by cutting away sharp turns and otherwise improving the course, the distance around the circuit in the center of the highway will be exactly 8.7412 miles.

The Vanderbilt will thus be either 33 or 35 circuits of the course, 288.2 or 304.6 miles; the Grand Prix, forty-five or forty-seven circuits, 393.75 or 410 miles. It has been decided to make the Pabst Blue Ribbon contest 225 miles and the Wisconsin Motor Trophy 175 miles, or as nearly this figure as possible.

### 15,000 FEWER AUTOS IN THE STATE OF NEW YORK

The number of automobiles in New York state has decreased 15,000 in the last year, according to figures made public at Albany, June 13, by the Secretary of State. There are now 85,300, as against over 100,000 in 1911. No reasons for the lessened number of vehicles are given.

In New York county, comprising Manhattan and The Bronx, there are 20,705 autos, of which 16,821 are pleasure vehicles; in Brooklyn, 7,687; in Queens, 2,223, and in Richmond, 754.

In Greater New York there are 22,157 chauffeurs to operate 31,369 machines. The auto and chauffeur fees from Greater New York aggregated over \$351,000, and from the whole state over \$856,000. There are 86,065 licensed chauffeurs in the state.

Of the 85,300 automobiles, 76,164 are for pleasure, 7,320 are run for commercial purposes, 1,572 belong to dealers and 244 are exempt.

Albany has 1,298 autos, Binghamton 1,028, Buffalo 6,347, Rochester 4,298, Utica 1,342, Syracuse 2,168, and Troy 1,048. There are 3,622 foreign-owned cars in the state. Hamilton county, in the Adirondacks, has the smallest number of autos—23. There are 2,762 in Nassau county, 1,419 in Orange county, 2,370 in Suffolk, and 4,723 in Westchester.

### **AUTOMOBILES IN TIENTSIN AND PEKING**

The motor car business is in its inception in North China. Up to a year ago there were only about a dozen motor cars in North China. These were owned in Peking and Tientsin, they being the only cities which have improved roads on which cars are available. Through the efforts of the U. S. Consul, a little over a year ago a local importing firm was induced to take an agency for an American motor car. It brought out three touring cars as a trial order. These became popular, and up to date the firm has disposed of 16 American cars. This firm also established a garage and repair shop. Seeing its success, a British firm has just established a garage and repair shop, and has taken an agency for a foreign car. There is no garage nor repair shop in Peking.

There would be an enormous market for motor cars in China if the country possessed suitable roads. The roads all through North China are simply cart tracts winding over the country, and have no modern improvements. The streets of the native cities, except Tientsin and Peking are too narrow to use cars. The streets are from 8 to 12 feet wide, without sidewalks and without macadam or paving. In the foreign concessions of Tientsin and in the newer portion of the native city there are wide, well-macadamized streets, about 50 miles in all. In Peking there is about the same mileage of streets available for motor traffic, including a road to the Summer Palace, 18 miles from the city.

### **NEW ADDITION FOR OHIO ELECTRICS**

The Ohio Electric Car Co., of Toledo, O., will erect a three-story addition to its factory in that city. The building will be 100 x 61 feet and will cost \$15,000.

### **FRANCE AS AN OUTLET FOR AUTOMOBILES AND ACCESSORIES**

The Paris correspondent of the Gummi-Zeitung deduces from recent statistics that France has about reached the limit of its productive capacity as regards automobiles, and is obliged to import them in augmented proportion, although French manufacturers are protected by a high import duty.

Comparative figures of French imports of automobiles show that imports from England, Germany and the United States had largely increased in 1911 as compared with 1910. The increase in the last named case was from the equivalent of \$152,000 to \$479,600.

These figures, it is remarked, would indicate that France presents better prospects than at any previous time as an outlet for automobiles, and likewise for automobile accessories, including, of course, rubber tires.

### **MOTOR PLANT SOLD**

The plant of the American Automobile Company, in New Albany, was sold at a receiver's sale June 15 for \$17,500 cash to the American Automobile Association, a new concern com-

posed chiefly of stockholders of the old company. The purchasers assumed a mortgage of \$25,000, which makes the plant cost them \$42,000. Officers of the new company announce that the plant will be open and operated in about thirty days, and will be started at about one-tenth of its capacity, which is ten cars a day and the output gradually increased as orders justify. The American Automobile Company went into the hands of a receiver about six months ago.

### **WILLYS-OVERLAND CO. EXPANDS**

Pursuant to his well known policy of expansion, President John N. Willys, of the Willys-Overland Company, of Toledo, Ohio, announces that the capitalization of the company will be increased from \$6,000,000 to \$15,000,000, four large buildings will be constructed, several smaller buildings increased in capacity; employment of 3,000 additional men, making a total of 9,000 on the payroll, which will amount to \$500,000 a month, and an output of 40,000 Overland cars for 1913. Mr. Willys said that he will turn out 200 finished cars every day when the improvements are made.

### **INDIANAPOLIS SPEEDWAY CLOSED FOR THE SEASON**

Directors of the Indianapolis Motor Speedway have abandoned plans for the proposed race meet at the Speedway August 31 and September 2. The track will be closed for the year and there will be no further meets until 1913. It is announced in connection with the abandoning of the meet that it is feared it would be impossible to obtain a race card of sufficient strength for the meet, owing to the short time in which to prepare for it.

### **MORE ADDITIONS TO OVERLAND PLANT**

Although a large extension has been little more than completed to the Willys-Overland plant in Toledo, building permits have been issued for the erection of three additional buildings—a three-story concrete structure, 92 x 162 feet, a one-story brick building, 68 x 82 feet, and a one-story concrete building, 41 x 33 feet.

### **SIMPLEX PLANT MOVES TO NEW JERSEY**

The Simplex Automobile Company has found it necessary to remove its plant from New York City to larger quarters located in New Brunswick, N. J. The former factory on the East River front has been entirely abandoned by the service station in Long Island City and the retail branch at Fifty-ninth street and Central Park South are being continued. The new factory covers three city blocks.

### **FIRST AUTO FACTORY FOR STATE OF OKLAHOMA**

The first automobile factory for the state of Oklahoma will be constructed at once at Oklahoma City. W. E. Nation is the promoter. The car will be made to suit the needs and conditions of the state of Oklahoma. The initial cost of the plant will be \$50,000. The building, which will contain 12,000 square feet of floor space, will be 100 x 120 feet.

### **PENN UNIT CAR TO BE REVIVED**

James K. Bowen, of Allentown, Pa., former head of the bankrupt Penn Unit Mfg. Co., of that city, has practically completed the organization of a new \$500,000 company of the same name to acquire the assets and continue the production of Penn Unit cars. Bowen is a man of ample means and has the work of organization well in hand.

# Smith Shop.

## ABOUT OILING

For some time after taking charge of an engine in a wood-working plant, I was continually annoyed by the plugging of the sight-feed oil cups with sawdust, bits of waste, etc., says a contributor to *The Wood Worker*. The workmen in the shop used oil from the engine room tank, and sawdust and other foreign matters were carelessly left by them. The can which I used in filling the cups had a spout of good size, being about 1 inch in diameter at the lower end. This I unscrewed and soldered a piece of fine wire screen across the end, just inside the thread which screws into the can. This strained the oil as it left the can, and prevented the clogging of the cups, an occasional cleaning of the can being all that was necessary.

This device, simple as it may seem, was of great benefit since I could feel confident that each cup would continue to feed as long as it was supplied with oil.

Isn't it strange that so many machine operators seem to think that if they put about four times as much oil outside of an oilhole as they do inside, somehow it will soak in some way, even through the iron cap? And about nine out of ten will fill their oilers till they run over, then use a bunch of waste to wipe them, causing much waste of oil.

Wouldn't it be wise to use pumps that will not pump the oilers to overflowing, something like we use for kerosene? And why do many engineers fill their lubricators till the oil runs over every time? Why not have a small pot that will hold just enough to fill the lubricator?

## MAKING GLUE JOINTS

A joint between two pieces of lumber, whereby they are to be made practically one, made by hand or by machine, to be a good joint and stay joined, should be hollow. If made by hand, the hollow should be as little as possible. These joints can be glued up by rubbing together, taken out of the vise inside of five minutes, turned vertical, the hands carrying the two pieces suspended in front, holding from the ends, and stood aside where they can stand fair and level, to dry. In the foreman's inspection tests he would expect to kick the two boards in the middle and they had to stand it, even after several boards had been glued up to form quite a wide top. Boards would split often, but joints held, and after that you would not have your joints doubted.

Machine joints, made on a buzz planer or jointer, are good all the time made thus. A hollow of 1/64 inch in every 3 feet of length in any lumber is right.

This joint will hold up with one clamp in the middle (or near it), which leaves room to work out the glue on the same plan as by hand, only using a mallet to drive the boards this way and that. The less glue you leave in between the two glued surfaces the better is the joint.

## FILES AND RASPS

To recut by a chemical process: Dissolve salaratus 4 ounces, to water one quart, sufficient to cover the files, and boil them in it for half an hour; then take out, wash and dry them; now stand them in a jar, filling it up with rain water and sulphuric acid in the proportion of water one quart to acid four ounces. If the files are coarse they will need to remain in about twelve hours, but for fine files six to eight hours will be all sufficient. When you take them out wash them clean, dry quickly, and put a little sweet oil upon them to prevent rust. This plan is applicable to blacksmiths, gunsmiths, tanners, cop-

persmiths, machinists, etc. Copper and tin workers will only require a short time to take the articles out of their files, as the soft metals with which they become filled are soon dissolved, leaving the files about as good as new. For blacksmiths and sawmill men it will require the full time. They may be recut two or three times, making in all more service than it took to wear out the file at first.

The preparation can be kept and used as long as you see action take place upon putting the files into it. Keep it covered when not in use.

## SUITING THE BEARINGS TO THE LUBRICANT

"Isn't that something new—fitting up bearings to suit the oil to be used in them? I never heard of that before!"

"It's a good thing for you to hear of, nevertheless," is the way a correspondent in *Wood Craft* puts it. "But in practice, it is usually best to reverse the matter, and, instead of fitting bearings to the oil it is desired to use, to select oils to suit the various bearings. This may necessitate the keeping on hand of a number of grades of oil, but it will pay.

"To work this thing out, have a man do the oiling for the whole shop or for a section of it, and let him keep a record of the oils used in several important bearings, totaling the amounts used in each bearing per week or month, to run without heating. Then, let the oils be changed in the bearings and have other tests carried out until your man has found the oil which gives best results and with the least oil consumption. That oil will pay best in that particular bearing and this series of tests will surely eliminate some of the bearings in the shop which run well with some oils you have used, but give trouble with other oils."

## REFITTING BOLSTER SPRINGS

As these are generally turned out by the factory you will find the clip corners are bent square, and here is where the majority of the breakages come. When repairing a job that has come in with the clips broken, make new clips, bending them round instead of with a square corner. Then, when fitting them to the bolsters, chamfer the edge of the stocks where the clips fit.

When making new bolsters, or when repairing old ones on which the spread plates have been broken or pulled off, set the plates about three inches from the ends of the bolster stocks. This makes a better joint and a stronger brace. The bolts with which the plate is fastened to the wood are then not so likely to pull out at the ends, or the stocks to break at the ends.

## WORKING ALUMINUM

The metal should be dry in most cases, except in tapping or when a fine finish is needed when turning. In this case a very light chip is taken and the metal is lubricated with turpentine from time to time. Aluminum, in common with other cast metals is lifeless; that is, long curling shavings cannot be taken off it as with steel, but the metal is removed in a shower of small chips as in cutting cast brass. The metal is easily torn, especially in turning and in cutting threads in a lathe, where the tool may dig in unless handled with care and rip out rough threads. For a nice surface finish, either in lathe or planer use a broad tool with a light cut. Aluminum can be cut as fast as brass if a light chip is taken.

## THE TOOL ROOM

All up-to-date factories recognize the value of a fully equipped tool room placed in the hands of a really competent man, who is made answerable for the proper equipment and perfect working condition of all cutting tools; and there is no doubt when this plan is carried out, the result is a larger output of better quality, with a considerable saving in power and time. It cannot be too frequently urged that a tool room is a really most important department. In addition to a full equipment of tools for repairs, it will be found to effect a considerable saving in time.

## STATUS OF CLASSIFICATION 51

Following the hearings at Kansas City and Minneapolis, Examiner Lyon, of the Interstate Commerce Commission, opened the second hearing at Chicago on May 29 and closed it June 5.

The rules discussed which were of interest to the implement manufacturers and dealers were:

- No. 6—Carload shipments defined.
- No. 6-B—Graduated scale of minimum weights.
- No. 7—Marking of less than carload freight.
- No. 8—Crating specifications.
- No. 16—Minimum charge on single shipments.
- No. 18—Charges for carload shipments versus charges for less than carload shipments.
- No. 21-B—Percentage of shipments taking high minimums.
- No. 22—Loading and unloading of freight.
- No. 23—Shippers' load and count.
- No. 27—Dunnage allowance.
- No. 33—Advancing of charges to shippers.

During the last day's session Mr. Thorne, for the state railroad commissions, presented to the examiner drafts of new rules to take the place of many of those objected to and mentioned above.

It is probable that the commission will not render a decision for four or five months. Western Classification No. 51 is now scheduled to become effective December 14, 1912, if not cancelled.

## CARRIAGE LEATHER\*

The class of hides principally used in the coach trade is known as split hides, that is, hides which have been cut in two, split down the center in their raw state by a splitting machine, the grain or side upon which the hair grew being termed a "split hide" and the remainder "split." Before the introduction of splitting machines, hides were shaved down by hard labor to their required substance; now, when given to the currier, they usually only require sufficient labor to level them to an equal substance all over. Some firms both tan and curry their own hides, but however good the selection of market hides may be, the proportion suitable for coach work is a small one, and when firms confine themselves exclusively to supplying coach builders and saddlers, the difficulty in dealing profitably with unsuitable hides is so great that many prefer to purchase selected hides from tanners, where by having a high price they are able to get their requirements satisfied without having to deal with large numbers of rejected goods, while the tanner, having more strings to his bow, is able to sell the latter profitably.

The currier's work upon the hides commences after the tanner has finished with them, and it is at this stage that much care must be taken that unsuitable hides are not appropriated for their several purposes. I need hardly remind a coach builder that the requirements of his trade are such that considerable knowledge is necessary in the selection of hides suitable for carriage building; particularly is this the case with hides for

carriage heads, for on the brilliancy and regularity of the grain of the leather the ultimate appearance of the carriage very much depends. In many cases the hide is required of such size that a landau head can be cut from a couple of them; and here let me say how much better the wearing capacity of a landau head is likely to prove when same has been cut out of three rather than two hides, for this reason—because the texture of the leather varies so much in different parts of the hide, the fibres being much coarser and less closely woven together in the bellies and flanks than in other parts, and nothing in the currier's art can overcome this. Heifer and cow hides are better in this respect than ox hides, but, as a general rule, the former, being smaller, will not give the required spread to enable a landau head to be got out of two of them. Of course, I know the price at which work is done will often not justify the use of a third hide, but it avoids the necessity of having to cut quarters into the flanks, and they should in consequence not only wear better, but be more regular in appearance. The hides having been classed for their special purposes, are shaved and levelled, and brought to their proper substance, after which they are scoured to rid the pores of the leather of all dirt and foreign substances, and are then put into a hot sumac liquor. Here they remain for some time, and sumac being a strong tanning agent tends to correct any defect in the tanning, and also softens and improves the color, etc. Some curriers tell us that hides should plump and thicken up in sumac, but personally, unless they are considerably undertanned, I do not think there is much in it. After sumac the hides are slightly oiled and set flat on a table, and in this process it is very necessary that as much as possible of the natural stretch in the leather should be got out; failure to do this properly now may give rise to japan cracking hereafter, but it is by no means the usual or most frequent cause of this trouble, of which I shall say more presently. The hides are now allowed to dry out, when they are grained and softened by several processes, after which they are ready for japanning or enameling.

Japanning is a comparatively new industry, having been employed only for about eighty years. Originally, hides were covered with a composition for the purpose of making them waterproof. There was no attempt to produce the brilliant surface essential today. This has been the outcome of the past fifty years, during which time the process has been a gradually improving one. It consists in spreading on the surface of the leather successive coats of a particular kind of varnish, made with linseed oil, Prussian blue, and other ingredients, usually dried and hardened on by means of a high temperature, and the process owes its name to the fact of its being an imitation of the famous lacquering of Japan, although the material employed and the processes are entirely different. Previous to its coming into use, hides for carriage heads, aprons, etc., were merely blacked and polished, but its adoption, owing to the far more brilliant appearance resulting, speedily became general. Many a currier must look back with regret to the old days when such unpleasant facts as japan cracking and enamel peeling were unknown, for, however much the brilliancy and appearance of carriages has been increased and improved since its institution, it has vastly added to the troubles of the currier. Japan, from the very nature of its composition, being simply the residue obtained from the evaporation of oil, it is necessarily a substance possessing a very limited amount of strength and elasticity, and but little stability, yet it is required to stand a straining force which is often not inconsiderable. For the currier's part two conditions are essential—that the leather is thoroughly well tanned, and that the natural stretch has, as far as possible, been got out of the hides before the japanner gets them. In japanning, goods must not be hurried, and not more heat used in drying off the coats than is absolutely necessary. The trimmer's part is also very important. One man will make his leather crack, where another, by more judicious handling, will give good results. He must be careful not to overstrain it, especially where there are sharp curves and bends, for any leather can be made to crack through care-

\*Extract from a paper read before the Institute of British Carriage Manufacturers by J. Metcalfe Hart.



less handling. I am inclined to think that japanned leathers have the best chance of giving good results if kept for, say, a couple of months of more before being used—especially so if kept in a dampish place, or one exposed to a free current of air, at a temperature of about 60 degrees. Some japanners make a great point of this, others do not lay so much stress upon it; but it is a fact that when leather has been subjected to some 160 degrees of heat or more, which is a very usual temperature in japanning, it takes a considerable time for what is called "the fire to get out of it." One often hears of the fine surface on leathers used by Continental coach makers, and I am told this is due to the various coats of japan being allowed to dry off naturally exposed to the atmosphere without heat. Each piece of leather should have eight to ten coats of japan, and the less heat used in drying off the various coats the less tendency is there for the surface to crack. Each coat must be fairly dried off before the next is added, but not too much so, otherwise the upper does not properly adhere to the lower one, in which case they may come apart afterwards, the fault known as japan stripping being the result. The surface inequalities are rubbed down after each coat with pumice stone, in the same manner as is done with coach painting, a fine, well-filled face being due to the several coats having been well "pummied." Enamel hides, instead of eight to ten, require only four coats of japan, the material used being composed of the same ingredients, but differently treated and prepared. They do not derive the same benefit from being kept as japanned leather; in fact, I consider they are best used at once.

Another trouble on which I wish to speak shortly is what is called "bagging." A dash or wing is properly stretched on to its frame, and after some few days shows signs—which generally increase rather than diminish—of "bagging," and losing that extreme tightness which is so necessary to a good appearance. My own belief is that, where leather is well tanned and the dash in question has not been cut into the extreme belly edge of the hide or split, this should not occur. For it clearly points to considerable stretching of the leather after work upon it is finished, and undoubtedly this is one of the characteristics of under-tanned or badly tanned leather, although other causes can be assigned for it. I have also heard some discussion as to the advisability, or otherwise, of wetting leather before sewing. Wet leather will stretch more than dry, so wet leather tightly stretched on a dash is probably a more severe strain on the elasticity of the japan than is dry. Wetting, however, makes the leather more yielding, and, from this point of view, should assist the japan; leather damped, but not wetted, is in its best condition to give good results. I sum up shortly what has been said on the subject of the prevention of patent leather from cracking, as follows: As far as possible let your bag hides, splits, etc., be seasoned—either keep them yourselves or depend upon your currier doing so for you; if yourselves, do not store them rolled up on shelves at the top of a trimming shop, where, owing to gas fumes and a very dry atmosphere, the leather cannot but become dried and perished; but rather hang up in a cool place, which allows a free circulation of moist air to get to them. If this is done your leather, being good to start with—within reasonable limits as to time—will be constantly improving. Be very careful that too great strain is not put upon it, and, if possible, have all dash and wing irons somewhat oval in shape rather than round. Split will not stand the same straining force as bag or Imperial hide, and I think the former are often used where the latter should be, owing to cheapness. Then if, unhappily, after having taken every precaution you are still troubled, the cracking is probably due to some defect in the tannage, currying, or japanning, but not necessarily so, because, as I have tried to explain, the very nature of the substance we are dealing with is fundamentally unstable, and very liable to be influenced by external conditions.

Mixture for blowholes in cast iron—Lead, 9 oz.; antimony, 2 oz.; bismuth, 1 oz. Melt and pour into holes.

## MERCHANT & EVANS TO MOVE PLATE DIPPING PLANT

The Merchant & Evans Co., with main offices in Philadelphia, and branch offices all over the country, has purchased fifteen acres of land adjacent to Glenova, on the outskirts of Wheeling, W. Va., on the Ohio River and Pennsylvania Railroad lines, where it will remove its tin plate dipping plant, and possibly some associate departments from Philadelphia, the coming fall. Fireproof buildings, 35,000 square feet area, will by that time be finished, and the production of this plant will run between three and four thousand boxes tin andterne plate per annum.

The portion of the Philadelphia plant thus vacated will be turned into an enlarged machine shop for the mechanical department of the business, producing the Hele-Shaw clutch.

## NATURAL VACUUM CLEANER

I see many makes of vacuum cleaners described by your readers and I am sending a scheme of my own, but any engineer or fireman can use it, that is, if they use it often enough so the neighbors won't kick, says W. A. Jones, in Practical Engineer.

Take two old 1¼-inch gate valves and make a connection on top of the boiler to the breeching as shown and get a light 1¼-inch hose long enough to reach the farthest dusty place

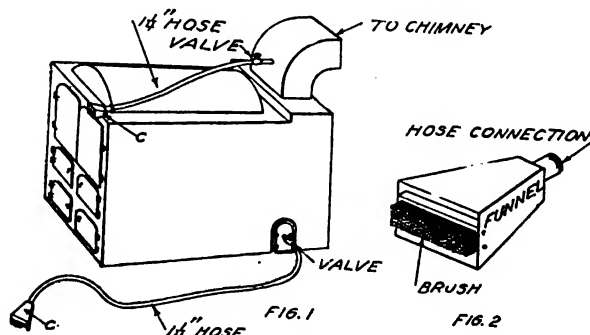


Fig. 1. Method of Attaching Vacuum Hose

Fig. 2. Dust Collector for Cleaner

on the boiler, connect the hose on the breeching, and then put on the dust collector as shown at C.

Fig. 2 shows how to make the dust collector, only a funnel with a long haired brush fixed in the end with the hair extending from the end so as to sweep or loosen the dust. Follow these instructions and you will be surprised to see the dust disappear. Put the hose on the clean-out door using the second valve, for cleaning the pumps and pipes on the floor, etc..

## LONDON SOCIETY LEADERS TO RESTORE CARRIAGE TO POPULARITY

Some titled women of London, Eng., whose love of horses is greater than their appreciation of gasoline driven vehicles have been putting their heads together partly with a view to restoring the horse drawn carriage of ten years ago to its place in public esteem.

Lady Tenderden and Lady Hughes Hunter are prominent members of a small committee of society women who are responsible for making a start in this direction by placing some small victorias on the public streets, each in charge of an expert coachman who, while too old to learn motor driving, yet has the topography of London at his finger tips.

The stables of this blue-blooded enterprise are in the heart of Belgravia, the most select residential district in the metropolis. Although the vehicles will ply for hire, the enterprise is by no means purely a commercial one. Lady Tenderden and her co-workers are animal lovers first and foremost, and they are trying to protect the interest also of worn out animals, by

either doctoring them up into usefulness, or if that is impossible, putting them painlessly out of their misery.

More than 3,000 persons have expressed their desire to help the movement on behalf of the cab horse, though the popularity of the taxicab is not likely to be menaced thereby.

### PHILADELPHIA CARRIAGE, WAGON AND MOTOR VEHICLE ASSOCIATION

The Carriage, Wagon and Motor Vehicle Association of Philadelphia held its regular monthly meeting at the Hotel Hanover, Twelfth and Arch streets, on Friday evening, May 17, this being the last gathering before the annual summer vacation.

The matter of the annual excursion to the seashore brought out considerable discussion whether the association should go both to Wildwood, as has been the long standing custom and to Atlantic City as well. It was finally voted to run the excursion to Wildwood earlier in the season, while the bathing is pleasant, and that the association, as a body, also visit the C. B. N. A. convention in September.

E. K. Schultz, a fire insurance expert of Philadelphia, delivered an address on features of fire insurance, bearing particularly on vehicle factory risks. He made very plain the meaning of such points as the co-insurance and 80 per cent. clauses in insurance policies, showing wherein the carriage man was responsible or otherwise for goods held on storage or for repairs, and telling what is being done by cities, states and the insurance interests to reduce the size of the nation's annual "ash heap."

The meeting, after the usual dinner, adjourned until the third Friday evening in September.

### COACHMAKER DECORATED

The Chevalier Luigi Belloni, of Milan, Italy, a prominent coach builder, has been decorated with the Order of the Crown of Italy.

### A PECULIAR USE OF ELECTRICITY

There has recently been discovered a peculiar use of electricity in clay working that is of some interest to wood workers because it involves the driving out of moisture, and is therefore suggestive of possible developments in drying lumber, says The Wood Worker.

Why it is of interest to the wood worker is this: If a direct current of electricity flowing through a body tends to carry with it the moisture in that body, the question immediately arises, why not make the connections at the two ends of a board or log, and thus drive the moisture out of it almost instantly? There are probable difficulties in the way of such an application, possibly enough of them to render the idea impractical, but just the same it is an interesting peculiarity of electricity, and it may prove worth experimenting with a little.

### GOODYEAR TIRE AND RUBBER CO. TO EXPAND

The stockholders of The Goodyear Tire and Rubber Co. voted on May 28 to increase the company's capital stock from five million to ten million common, and from one million to five million preferred. C. W. Seiberling, vice-president of this company, states that the five million preferred will be issued at once. Instead of being redeemable at 105, as it is at present, it will be redeemable at 120 at the company's option after January 1, 1915, the holders of the present one million preferred having agreed to exchange their stock share for share for new preferred. The balance of the new preferred, four million, will be offered to the common stockholders at par. The new plan is wholly separate from the transfer completed some weeks ago, in which the stockholders received 100 per

cent. stock dividend and rights to take \$340,000 treasury common stock at par.

The Goodyear Tire and Rubber Co. contemplates several additions and two new buildings. The first will be an addition of two stories to building 13, now used as a factory building. This building will be 296 x 60 feet, and of brick, steel and reinforced concrete construction. Plans are now being prepared for a large garage 405 x 78 feet, and another new factory building, details of which have not been given to the public.

### BUFFALO WORKHORSE PARADE POSTPONED

The Erie County Society for the Prevention of Cruelty to Animals has postponed its work horse parade from the forenoon of July 4 to the afternoon of July 10. When it was found that a number of firms feared to have their high-spirited horses on the street while firecrackers were being set off and that several large entries would be shut out because their business demanded extra deliveries on the morning of the Fourth, a new date was at once sought which would enable the majority of firms to enter their teams. Wednesday, July 10, at once met favor.

Several entries for the parade had already reached the office of the society, but the firms represented readily agreed to the new arrangement.

### BACK INTO THE CARRIAGE LINE

A. B. Gaugh, formerly associated with the Parry Mfg. Company for fifteen years, but who for the past three years has been in another line, has been reengaged by the Parry company for work in the sales department. He will do office and special road work. Practically all of Mr. Gaugh's vehicle experience has been in southern Indiana and Ohio, where he is well and favorably known by a good following of vehicle dealers.

### THE NEWARK SHOW

Although not included in the national circuit of the National Association of Automobile Manufacturers, Newark, N. J., has set the date of its 1913 show for February 15-22. It will be held under the auspices of the New Jersey Exhibition Co., which is the title under which the Newark dealers operate, and will be held in the First Regiment Armory.

### MELBOURNE'S FIRST SHOW

The first "regular" automobile show to occur in Melbourne, Aus., is scheduled to occur August 31 to September 7. It will be held under the auspices of the Automobile Club of Victoria, Ltd., of which F. Leslie Bruford is secretary. It will be staged in the Exhibition Building, a commodious and remarkably handsome structure.

### TRUCK COMPANY ACQUIRES PLANT

The former factory of the Elkhart Wrench Co., Elkhart, Ind., has been remodeled for the occupancy of the Bucklen Auto-Truck Co. Machinery now is being installed, and it is stated that the manufacture of Bucklen trucks will be commenced in earnest.

Most hickory consumers still pay a very much better price for the sap or white, notwithstanding the Government tests which prove that the red or heart is just as good. Uncle Sam seems to think it even better for sawed felloes, since his specifications for sawed felloes say they must be clear of white or sap. He will not accept a speck of white for sawed hickory felloes.

To remove gummed oil—Caustic soda, one pint dissolved in one gallon of water.

## Vehicles Seldom Seen Now

Of distinctly American commercial vehicles the first one was the Conestoga wagon. This took its name from the locality where it originated, and at one time more than 3,000 of them dotted the roads of Pennsylvania which ran from Philadelphia to nearby towns. This vehicle was so famous in the early days that its drivers were able to demand a special sort of cigar for their use from the cigar makers. This was the stogey, first made for the benefit of the Conestoga teamsters. They wanted a substantial, long smoke to ease the rough hauls over the provincial roads, so the cigar makers invented this cigar for them and made it a foot long, too.

At the time the Conestoga wagon was looked upon as a triumph of the wagon maker's art. It was a freight carrier and was well adapted to the demands which brought it into being. It passed away with the coming of the railroads, when the reason for its manufacture ceased to exist. The idea the builders of this wagon sought to carry out was to build it on lines which would enable it to cover the ground as easily as a ship sailed the seas. The body of the wagon was shaped like a boat with the bottom curved. This enabled it to carry a secure load over the mountains of Pennsylvania, as the freight when properly packed in it would not shift, regardless of the angle at which the vehicle might be tilted.

The wagons carried from four to six tons, the load being carried up to the tops of the bows. One ton for each horse was the rule for determining the capacity and the wagons were loaded to capacity. The driver, finding no room in the wagon, rode the near horse of the first pair, but even then he was provided with shelter, for the top of the wagon extended out in front nearly to the heads of the first team of horses.

The owners' tastes ran to brilliant colors in painting their wagons, and the same love of bright hues was extended to the reins, which were colored scarlet and orange and green.

More than a hundred of these wagons going along the road in a row and so close together that the noses of the leaders were in the trough of the wagon in front was a common sight in those days. The Conestoga wagon was an important art of the transportation facilities in colonial war times. It came prominently into notice for the first time to people outside of the section where it came into being in Gen. Braddock's ill fated expedition through the wilderness, when he opposed his grenadiers in solid formation against the guerrilla methods of the Indians. Gen. Braddock petitioned the Pennsylvania Assembly to furnish him with 150 Conestoga wagons to carry his army's baggage, but twenty-five was all he could get. Franklin remarked at the time that it was too bad Braddock's troops had not been landed in Philadelphia, where every farmer roundabout was the owner of a Conestoga wagon.

During the Revolutionary war this wagon was used more than any other form of conveyance for the transportation of munitions of war. In 1780 President Reed, of Pennsylvania, wrote to George Washington that "the army has been chiefly supplied with horses and wagons from this state." Further on he regretted the circumstance that an additional demand for 1,000 teams was to be made upon his community, and he expressed the opinion that his state could not stand it. This in spite of the fact that practically no other type of vehicle for transporting freight was in use in that neighborhood, which shows how generally the Conestoga wagon was employed.

But perhaps it was during the westward movement of emigration, when thousands hiked across the plains, many of them without stopping until the other ocean was reached, that the Conestoga became a nationally famous wagon. It was dubbed the "prairie schooner."

The direct cause for the production of the Conestoga wagon

and its usefulness in the early days was the condition of American roads. Some of them were hardly more than trails, and even the best of them were primitive, as roads are built today. In New England, for instance, the first roads were known as "trodden paths" and are so styled in the early court records. They were seldom more than two feet wide, covered with pine needles and fallen leaves.

When wealthy colonists increased to an extent that enabled them to bring horses from Europe these trails became bridle paths. Increased communication and commercial intercourse between the colonies led to the building of corduroy roads so that the rapidly developing transportation business could be carried on with wheeled vehicles. Swampy spots, holes and washouts were filled in with brush and logs. It was on these roads that the Conestoga wagon became so important a vehicle, with its boat shaped body and its wheels with tires a foot wide.

For passenger traffic the Concord coach at a later date became as famous in its own field as did the heavier vehicle. The Concord coach carried no freight but had accommodations for a large number of passengers. It made its appearance in 1827, taking its name from town of Concord, N. H. Considering the time of its production, it is said to have been the most perfect vehicle of its class ever made. In fact, with some slight necessary changes the Concord coach is in use today on rough roads in some mountainous parts of the country, and the old time stage coach that figured in so many western romances was of the Concord type.

These coaches ran from one station to another, covering a regularly allotted part of the distance from one city to another. The horses were changed at specified stages, after the manner of the English coaches, and this custom gave rise to its name of stage coach. But the Concord coaches were much more comfortable and much lighter than the English coaches.

One of the most important features of the work done by the Concord coaches was the carrying of the mails. Lively work was expected of men and horses around the time when mail carrying contracts were to be given out, to fit them for the test upon which the getting of the contract depended. This test was the speed with which the President's message was delivered to the towns along the route. Fast records were made by these coaches.

One driver, Dan Gordon, declared he carried a President's message thirty-two miles in two hours and twenty minutes, including the time consumed in three changes of horses. Another driver, Dan Noble, set up a record for the run from Wheeling to Hagerstown, 185 miles in fifteen and a half hours.

The Concord coaches played as great a part as the Conestoga wagons in the development of this country. By 1832 there had been established 106 lines of stage coaches to handle the passenger traffic from Boston alone. As one example of the direct influence of these lines in the encouraging of new enterprises, it can be said that the Boston Traveler was a newspaper which was originally established as a stage coach paper, and so got its name.

When the steamboat was improved to such an extent that it would go right along without stopping for repairs a line was established to run between New York and Providence. The stage coach lines between Boston and Providence then became most active. As many as twenty coach loads of passengers bound for the steamboats, and as many going from the boats to Boston, rolled over the road each day. Even then, transportation rates were attacked when they were thought to be too high by the citizens. The regular rate for this trip having been set at \$3, people kicked about it. A rival line was then started, which charged \$2.50. One of the

earliest rate wars between transportation companies was the result of this 50-cent cut.

The war waxed hotter and hotter, until the old company determined to institute the freezeout. It offered to carry first-booked passengers for nothing. The new line came cheerfully back with a proposition to its patrons not only to carry them for nothing but to supply a dinner at the end of the ride free gratis. The old one then raised the ante by offering to carry people free, to give them a dinner when dinner time came around and to throw in for good measure a bottle of wine.

Those were great times for the nervy and enterprising. They would ride back and forth through the beautiful New England scenery, live on the best the land could supply in eatables and drinkables and not spend a penny. Then a rate agreement was arrived at between the two warring companies, who really felt they must safeguard their treasuries. A rate of \$2 was fixed for the trip from Boston to Providence, or the other way, as the standard for all companies.

Commenting on the speed attained by these coaches, the editor of the Providence Gazette wrote:

"We were rattled from Boston to Providence in four hours and fifty minutes—if any one wants to go faster he may send to Kentucky and charter a streak of lightning."

But the railroad train did even better.

### CARRIAGE AND WAGON AND MATERIAL STATISTICS FOR MICHIGAN

The decline which has taken place in this industry during recent years is brought out in the following table, which shows the number and value of the different kinds of vehicles manufactured in 1909, 1904 and 1899:

Product.	1909	1904	1899
Total value .....	\$10,158,883	\$14,889,457	\$12,887,134
Carriages (family and pleasure):			
Number .....	91,558	174,889	193,254
Value .....	4,453,090	7,784,444	7,425,754
Wagons:			
Number .....	28,720	52,723	49,903
Value .....	1,586,172	2,352,958	2,049,460
Business—			
Number .....	17,600	20,283	(1)
Value .....	985,599	(1)	(1)
Farm—			
Number .....	10,937	30,521	(1)
Value .....	523,803	(1)	(1)
Government, municipal, etc.—			
Number .....	183	1,469	(1)
Value .....	76,770	(1)	(1)
Public conveyances (cabs, hacks, hansoms, hotel coaches, omnibuses, etc.):			
Number .....	201	120	.....
Value .....	118,490	116,026	.....
Sleighs and sleds:			
Number .....	32,751	31,180	51,149
Value .....	570,207	977,822	846,765
Automobiles:			
Number .....	143	.....	.....
Value .....	179,819	.....	.....
All other products, including parts and repair work....	3,251,105	3,658,207	2,565,155

During the past few years there has been, in Michigan, a considerable shifting of capital from the manufacture of carriages and wagons to the manufacture of automobiles. As a result of the increasing displacement of carriages and wagons by motor vehicles, not only has the automobile industry attracted new capital into the state, but many factories which were formerly engaged in the manufacture of carriages and wagons have found it more profitable to use their plants for making automobiles or automobile bodies or parts.

Less than half as many pleasure carriages were manufactured in the state in 1909 as in 1899, and in the number of wagons the loss was nearly as great. The decreases took place mainly during the five years from 1904 to 1909.

### Automobiles, Including Bodies and Parts

The number and value of the different classes of machines manufactured, as reported at the censuses of 1909 and 1904, are shown in the next table.

There were 64,800 machines of all kinds, valued at \$70,359,749, turned out in 1909, as compared with 9,125 machines, valued at \$6,552,804, in 1904. The increase in value was much greater relatively than that in number, so that the average value per machine in 1909, \$1,086, was higher than in 1904, when it was \$718. The value of all other products reported, which, for the most part, represents the value of automobile bodies and parts turned out by establishments engaged primarily in that branch of manufacture, increased even more rapidly than that of the complete machines, being more than eighteen times as great in 1909 as in 1904; the fact that the value of "all other products" in 1909 was \$26,291,702 indicates the importance of that branch of industry.

While comparative figures in respect to the horsepower of the machines manufactured are not available for previous censuses, it is of interest to know that of the 64,800 machines reported for 1909, 4,328 were of less than 10 horsepower; 13,814 of 10 horsepower but less than 20; 17,938 of 20 horsepower but less than 30; 28,103 of 30 horsepower but less than 50; and 617 of 50 horsepower but less than 90.

In 1909 all the automobiles manufactured were gasoline, except 538 which were electric; in 1904 only 11 electric automobiles were reported. Of the total number of cars reported for 1909, 64,025, or 98 per cent., were passenger vehicles. In 1904, only 102 of the last named vehicles were reported, forming about the same proportion of the total number manufacturer as in 1909. In 1909, 68.5 per cent. of the passenger vehicles were touring cars, and 28.9 per cent. runabouts.

Product	1909 Number	1909 Value	1904 Number	1904 Value
Total value .....	.....	\$96,651,451	.....	\$7,996,534
Automobiles .....	64,800	70,359,749	9,125	6,552,804
Gasoline .....	64,262	69,130,223	9,114	6,537,404
Electric .....	538	1,229,526	11	15,400
Passenger vehicles ..	64,025	69,038,067	9,023	6,481,164
Buggies, runabouts, and touring cars..	62,319	64,940,793	9,023	6,481,164
Limousines, cabs, etc.	1,560	3,825,066	(1)	.....
Omnibuses, ambulances, fire department patrol, sight-seeing wagons, etc.	146	273,108	(1)	.....
Business vehicles (merchandise) ....	775	1,320,782	102	71,640
Delivery wagons ..	401	319,071	51	35,250
Trucks and all other	374	1,001,711	51	36,390
All other products, including bodies and parts and repair work .....	.....	26,291,702	.....	1,443,730

### CHANGE AT OLDS MOTOR WORKS

Oliver C. Hutchinson, formerly manager of the Marquette Company, has been promoted to succeed W. J. Mead as vice-president and general manager of the Old Motor Works at Lansing.

### ELGIN ROAD RACES ABANDONED

After four months of unsuccessful effort to obtain entries for the 1912 Elgin road races, scheduled by the A. A. A. for sanction August 23 and 24, the directors of the Chicago Motor Club have decided to abandon the annual event for this year.

### GRAMM-BERNSTEIN CO. INCORPORATES

The Gramm-Bernstein Co. has been incorporated at Lima, O., with a capital stock of \$500,000, to manufacture motor trucks, automobiles, cars and vehicles, by B. A. Gramm, Max Bernstein, Fred Biezantz, Dudley Bernstein and H. O. Bentley.

# Philadelphia and Thereabouts

The Hub Scribe Makes the Rounds of the Trade and Reports on General Conditions as He Finds Them

Philadelphia, July 1.—There is not a great deal of fine carriage trade here now, except among the real lovers of the horse. This class, while not numerous, are great pluggers for the horse as a means of locomotion. The demand for fine driving horses, singles and pairs, of action and speed is good and prices rule strong, because the supply is short. The breeding of horses has been curtailed and the increase in population has some effect. Good judges of horses and present conditions say that the horse will never be any cheaper and the price has advanced considerably during the past few years.

Some say that the automobile is at the zenith of its popularity and that its use will never be greater than at present. In New York state, according to the figures made public by the Secretary of State, the auto in use has decreased during the past year 15,000. The same decrease has been reported in other states. This is a big falling off in one year. It means that a great many are giving up the automobile, that it is no longer a fad and that its use in the future will be more on a business basis, the same as the bicycle and the motorcycle. Airships are even now taking the place of the automobile in popularity and many who own autos also own airships or are devoting their entire time to the latter.

Clarence Hartley and Martin Hartley, who work at the carriage trade in Mifflinburg, Pa., have worked for a year on an aeroplane, having worked days at their trade and nights on their machine. It is now perfected and is said to be working successfully.

The Hoover Wagon Co., of York, Pa., has shipped some good orders to Greece.

The demand for hubs, spokes, rims, wagon material of all kinds, is reported quiet. The trade is not buying for future wants and only taking what is required for present necessities. Prices rule about the same and the supply is sufficient, owing to the light demand. If the demand should suddenly be strong there will be considerable trouble in filling orders.

The delivery, trucking and heavy wagon work is what the trade depends on today. These lines are fairly good and there is always something doing. The dump wagon trade is quite good. The automobile trade has been invading the hearse line and funeral wagons, but the demand is still for carriages.

The Baltimore (Md.) Hub, Wheel & Manufacturing Co., of 326 North Holliday street, is doing a very good business in spokes, rims, hubs and vehicle material. The company has filled some good orders for the government at Panama, has a large export business, runs full time, 60 hours a week, and never closes. Is now making motor truck and automobile wheels of second growth hickory.

At the plant of the Cortland (N. Y.) Carriage Goods Co., an addition has been built to the forging department, comprising over 11,000 square feet of floor space. Has put in operation a new power house, with a Smith gas producer and Buckeye engine. The line of carriage hardware has been extended by taking up the manufacture of body hangers, body loops and other heavy forgings.

The Gregg-Rogers Carriage Co., of Arch street, had quite a bad fire a short time ago in their basement, when about thirty auto bodies and cars burned, causing a loss of \$50,000. Has now started the building of a four-story 40 x 150 foot concrete addition, to cost \$80,000. It will be used for a machine shop and to repair engines for automobiles. This firm is very busy with the automobile trade, but the carriage trade has fallen off a lot.

E. C. Everhart, vice-president of the Gregg-Rogers Co., will

go on his vacation to the mountains in New York state. H. F. Keachline will spend the summer at Atlantic City. F. W. Schriver will take his vacation at Delaware Water Gap.

The Martin Carriage Works, of York, Pa., are busy and working to full capacity.

A. Geisel & Sons, of North Third street, are building a lot of hearses and undertakers' bodies and have a good demand for automobile bodies. Their carriage trade is fair.

J. L. Snyder will conduct the business of the Swab Wagon Co., of Newport, Pa.

The Keystone Vehicle Co., of Reading, Pa., has 225 hands working, has been working overtime and has orders for six months ahead.

Charles L. Dowler, of Third street, reports that the expense of doing business in the wagon material line is more than it was years ago. The shipments are smaller and it costs more in proportion to do business on a small scale. Builders are not carrying stocks for future use, and are not anticipating their wants. The wagon builders are feeling their way and buying from hand to mouth, which means more work and less money for the firm handling material. The automobile is, of course, quite a factor.

The Sheldon Axle Co., of Wilkesbarre, Pa., has started manufacturing a one-ton chassis auto truck, without a motor or radiator, allowing buyers to install their own motor. The firm has begun work on a new assembling plant 60 x 200 feet in size and will manufacture about 1,500 cars a year, which will be increased later.

The Philadelphia Fire Department will introduce the motor vehicle to replace the horse-drawn apparatus, for long runs. The change will cost the city \$3,000,000. It is said that the repairs are less and better service is maintained.

The Mifflinburg (Pa.) Body & Gear Co. is doing a very good business. It has a five-acre plant and will probably increase the output.

John C. Raum & Son, of 303 South Sharp street, Baltimore, have started building at 405 South Sharp street, a three-story brick and concrete building, 23 x 90 feet in size, for their factory to manufacture sanitary anti drip wagons.

J. L. Snyder, of the Snyder Carriage Co., of Newport, Pa., has sold his interest in the concern to his two brothers, W. H. and J. W. Snyder, who will conduct the business under the same name as before.

Wolffington & Sons, of Twentieth and Filbert streets, have gone out of the carriage manufacturing line and will confine their attention to the automobile business.

W. J. Meyers, of Alexandria, Pa., who conducted a carriage shop for fifteen years, has sold out to Piper Bros.

The John Buckley Hub, Spoke & Wheel Co., of 969 North Second street, reports business a little better and is getting into some other lines, including automobile supplies. It has a large stock of hickory and oak stuff on hand.

Sowney Bros., of Frankford avenue, is about the only large firm here making individual carriages. They turn out 100 jobs a year, covering 60 cities, have 50 hands and make a specialty of coaches, hearses, etc., for the livery trade. They have made extensive improvements during the past few years and have the facilities to employ 150 hands and do a big business if they have the business. The automobile business has demoralized all the private coach, livery and boarding stables. The use of automobiles has proven to be an expensive luxury and a good many are selling their autos. This firm did have the intention of getting in the automobile line, but concluded not



to do so, as there are so many in it and each one is trying to cut the other's head off. The automobile has competed some with the horse and carriage for funerals, but not successfully. It costs more to keep a horse now than it used to.

The International Motor Co. has opened a branch at 635 North Broad street. It was formed to manufacture the products of the Sauer Motor Co., of Plainfield, N. J., and the Mack Bros. Motor Car Co., of Allentown, Pa. This concern has secured a factory having 17,000 square feet of space for storage and for repair work.

The Scranton (Pa.) Axle & Spring Co. is having a good export business, having made some very satisfactory shipments to Mexico and South America. This firm has taken over the Kenmore Iron Works and now has a capacity of 100,000 sets of springs and as many axles a year. Two hundred hands are employed.

The Rich-Marbraker Co., at Eighth street and Girard avenue, has completed two 30-passenger sight seeing cars for the Gray line at Asbury Park; a \$4,000 ambulance for Reading, Pa.; a \$4,000 ambulance for the Medico-Chi, of Philadelphia, of the limousine type, four rear and side doors, and are building some 60 or 70 wagons. The company reports this as the busiest year since 1906. Fibre was tried out for side panels, but it was not lasting. Has not used much aluminum for the bodies so far.

The Blocher Carriage Works, of Littleton, Pa., has plenty of work and has built a new building for its carriage manufacturing business.

The Columbia (Pa.) Wagon factory shipped a car load of wagons to Porto Rico and has had plenty of orders on hand. An addition will be built to the factory.

### **ARTIFICIAL RUBBER FACTORY IN HOLLAND**

A factory to produce artificial rubber has been established at Ymuiden, the port at the mouth of the North Sea Canal. It is said that the company instituting this factory has succeeded in producing a substance having the qualities of rubber and also certain special advantages over genuine rubber.

The process is a secret, but the principal ingredient of the product is said to be fresh sea fish, which are brought to Ymuiden in vast quantities by the Dutch fishing fleets. According to report 15 to 16 per cent. of natural rubber is added to the fish, and the result is a substance as flexible and elastic as rubber, but much cheaper—about as 1.25 to 8 in price, compared with real rubber. The low price of this product will be caused partly by the by-products which are possible, for it is said that much albumin will be made from the fish and that half of the factory is arranged for the manufacture of guano.

It is stated that this artificial rubber can be vulcanized in a short time; that it is benzine-proof and can resist the effect of heat. At first sight the substance much resembles real rubber. A slightly fishy smell betrays the chief ingredient, but it is explained that this will be prevented by extracting the fat of the fish.

### **ANNOUNCEMENT**

The Cortland Carriage Goods Co., Inc., of Cortland, N. Y., announce with pleasure that Mr. Marshall C. Wood, of Raleigh, N. C., has entered their employ and will, after July 1, represent them in the states of Virginia, North and South Carolina, Georgia and Alabama. Mr. Wood will succeed in this territory Mr. Jesse Jennison, who was promoted last February to sales manager, with headquarters in Cortland.

Mr. Wood has traveled the southern states for the past five years and has a wide acquaintance with the carriage trade.

### **MOTOR CARNIVAL POSTPONED**

The proposed motor carnival in New York City has been postponed until the week of September 9-14, as the originally

scheduled dates in July come at a time when the automobile business is at a low ebb and so many motorists and people connected with the trade are on vacations.

### **HESS SPRING AND AXLE CO.'S ADDITION**

The Hess Spring and Axle Co., Carthage, O., has completed an addition to its plant, 60x225 feet, which will be utilized exclusively for the manufacture of automobile axles. The present capacity is 12,000 complete sets per year. The company will soon put on the market a rear axle, which is claimed will show a decided improvement over anything yet gotten out for the automobile trade.

### **MAURICE CONNOLLY FOR CONGRESS**

Maurice Connolly, Dubuque, Iowa, president of the Connolly Carriage Co., a past president of the Carriage Builders' National Association, was nominated at the June primaries for Congress in the Third Iowa District. Mr. Connolly is also an officer in several prominent Dubuque institutions. He is a graduate of Cornell University and the New York Law School, and was admitted to the bar at the age of twenty-one. On the death of his father he assumed his business responsibilities.

### **PADUCAH FACTORY TO BE REBUILT AT ONCE**

The factory of the Hardy Buggy Company, Paducah, Ky., which was recently destroyed by fire, the loss being \$50,000, will be rebuilt at once, according to W. T. Hardy, president of the company. When the plant was burned the company had more orders on its books than at any time since it had been in business and the big rush in business necessitates rebuilding without further delay. Temporary quarters have been secured and the force increased to its normal capacity.

### **BEGINS MAKING SLEIGHS EARLIER THAN USUAL**

The Belknap Wagon Works, Grand Rapids, Mich., began its run on sleighs for the fall trade a month earlier than usual this year. The first order to be filled will be for a carload to go to Nome, Alaska. At the same time the Nome order was put into the factory an order was received for a carload of orchard wagons for Cuba and the two orders will go through together.

### **RECEIVERS' REPORT**

Receivers Robert Kennedy and Brandon Millikin, of the Columbia Carriage Company, Hamilton, O., filed a final report on May 18 of their dealings for the company during its litigation and asked to be discharged. The receipts and expenditures were \$224,393.75. All claims paid amounted to \$179,871.90, being paid at the rate of .729 per cent.

### **ENLARGING THE MARMON PLANT**

Two stories are being added to one of the main factory buildings which comprise the Nordyke & Marmon plant in Indianapolis. They will be 52x243 feet, and this will add 25,300 square feet to the company's space. A new two-story office building, 43x153 feet, also is in course of erection.

### **SPARKS-WITHINGTON ESTABLISHES CANADA BRANCH**

The Sparks-Withington Co., of Jackson, Mich., has established a branch in Walkerville, Ont., where its one-piece blade radiator fan will be produced in quantities. The fan is protected by Canadian patents, which will serve to strengthen their position on the other side.

# Trade News From Near and Far

## BUSINESS CHANGES

A. T. Warren has disposed of his stock of vehicles, etc., in Laurel, Neb.

George Averill has disposed of his stock of vehicles, etc., in Fullerton, Neb.

R. A. Blake has sold out his stock of vehicles, etc., in Howard, Kas., to C. C. Sell.

J. M. Duffy has purchased the stock of vehicles, etc., of R. McGuire, in Sac City, Ia.

D. E. Graham has purchased the stock of vehicles, etc., of Abe Lindhal, in Agenda, Kas.

Hawley Brothers have purchased the business of J. B. Buttermore, in Sylvan Grove, Kas.

W. A. Hills has purchased the vehicle business of W. E. Banks & Son, in Loveland, Colo.

H. C. Badger has purchased the stock of buggies, etc., of Faylor Brothers, in Sapulpa, Okla.

O. T. Norem has purchased the stock of vehicles, etc., of Collins & Frohlich, in Gary, S. D.

A. C. Thompson has purchased the John D. Richards stock of carriages, etc., in Okemah, Okla.

J. W. Nisbeth has purchased the stock of vehicles and implements of J. M. Jobson, in Bevier, Mo.

P. R. Smith has purchased the stock of vehicles, etc., of Schierbrock & O'Connor, in Neola, Ia.

C. W. Sparman has disposed of his stock of vehicles, etc., in Crawford, Neb., to Clarence A. Sheldon.

Fred Roweld has purchased the vehicle and implement business of Henry C. Ficke, in Wheatland, Ia.

W. E. Lee has disposed of his stock of vehicles, etc., in Kremlin, Okla., to David & Henry Schmidt.

J. W. Shaler has succeeded to the vehicle and implement business of Shaler & Wilkinson, in Chelsea, Ia.

Egane Renaud has succeeded to the vehicle and implement business of Geertsman & Renaud, in Lynnville, Ia.

O. S. Hokanson has purchased the stock of buggies and implements of H. A. Hemming, in Wheaton, Minn.

E. C. Dunham has disposed of his stock of vehicles, etc., in Frankfort, Kas., to Wallace Gibbs, of Elk City, Kas.

J. M. Duffy has purchased the interest of his partner, R. McGuire, in the vehicle and implement business in Vail, Ia.

Robert Stipe has purchased an interest in the hardware and buggy business of his brother, W. M. Stipe, of Diamond, Wash.

A. G. Ditto has disposed of his stock of vehicles, etc., in West Point, Ky., to the West Point Hardware & Implement Co.

## NEW FIRMS AND INCORPORATIONS

Dodson & Dodson have opened a stock of buggies, etc., in Pratt, Kas.

I. E. Crabb has just put in a new line of buggies, etc., in Savannah, Mo.

Hugh Chestnut has just opened a new stock of buggies in Amarillo, Tex.

W. R. Stroupe is soon to open a new carriage factory in Charlotte, N. C.

R. W. Augustine has opened a new stock of vehicles, etc., in Hanson, Neb.

S. C. Wright is engaging in the vehicle and hardware business in Perris, Cal.

G. A. Bieber is about to engage in the vehicle and hardware business in Lawler, Ia.

C. F. Harding is putting in a stock of vehicles and implements in Ralston, Wash.

Joseph & Christen have engaged in the vehicle and implement business in Lemoyne, Ohio.

John H. Ward and others are about to engage in the vehicle manufacturing business in Griffin, Ga.

The Todd & Courtney Co. has been incorporated in Barberton, Ohio, to deal in automobiles, vehicles and accessories.

## IMPROVEMENTS AND EXTENSIONS

A. W. Miles has built an addition to his vehicle and implement house in Livingston, Mont.

Idso & Anderson are about to erect an addition to their vehicle store in Randall, Ia.

Swanson & Hedlund have begun the erection of a new vehicle and implement building in Ceresco, Neb.

The Seabury-Carson Co. is about to erect a two-story vehicle and implement building in Mondamin, Ia.

## NEWS OF THE AUTO TRADE

The Geneva Automobile Co. has opened for business in Geneva, Neb.

The Douglas Automobile Co. is about to engage in business in Douglas, Neb.

W. E. Nation proposes to establish an automobile factory in Oklahoma City, Okla.

S. R. Benton has disposed of his automobile business in Cairo, Neb., to J. H. Still & Son.

The West Coast Auto Co. has been incorporated in Tampa, Fla., with a capital stock of \$25,000.

The Industrial Garage Co. has been incorporated in Omaha, Neb., with a capital stock of \$10,000.

The Orr Motor Sales Co. has been incorporated in Omaha, Neb., with a capital stock of \$50,000.

The Stanley Automobile Co. has been incorporated in Louisville, Ky., with a capital stock of \$2,000.

The Capital Motor Car Co. has been organized in Raleigh, N. C., with R. D. Goodwin as president.

The Commercial Motor Co. has been incorporated in Louisville, Ky., with a capital stock of \$10,000.

The Robinson Motor Car Co. has been incorporated in Detroit, Mich., with a capital stock of \$10,000.

The San Marcos Auto Co. has been incorporated in San Marcos, Tex., with a capital stock of \$2,000.

The Carolina Electric Vehicle Co. has been incorporated in Asheville, N. C., with a capital stock of \$25,000.

The Robinson Automobile Co. has been incorporated in Charleston, S. C., with a capital stock of \$20,000.

The Everett Auto-Sales Co., Columbus, Ohio, capital \$30,000, has been incorporated by Horace E. Dobson and others.

The capital stock of the New Way Motor Car Co., in Lansing, Mich., has been increased from \$350,000 to \$500,000.

Amplex Motor Car Co., capital \$1,000,000, has been incorporated at Wilming, Del., by W. J. Maloney, N. P. Coffin.

The Enterprise Motor Truck Co. has been incorporated in Baltimore, Md., with G. H. Nachman and others as incorporators.

The Westfield (Mass.) Motor Truck Company, capital \$100,000, has been incorporated by E. L. Hull and Henry W. Hall-bourg.

Dearborn Automobile Company, capital \$10,000, has been incorporated at Chicago, Ill., by Sidney Oppenheim, Arthur Rosenthal.

The Automobile Sales Corporation, capital \$30,000, president, P. L. Neel; vice-president, J. P. Shoch, has been incorporated at Camden, N. J.

Brooks Motor Car Co., to deal in automobiles, capital \$100,000, has been incorporated at Buffalo, N. Y., by H. G. Rechsteiner and G. B. North.

The Peerless Rubber & Tire Co., Toledo, O., tires and automobile accessories, capital \$10,000, has been incorporated by R. G. Wierman and J. T. Hickman.

The Buffalo Sled Co., manufacturing sleds, wagons, etc., capital \$75,000, has been incorporated at North Tonawanda, N. Y., by J. J. Schneider and C. D. Orcutt.

The Milo Machinery & Supply Company, Muncie, Ind., capital \$1,000, to buy and sell all machinery and material connected with the manufacture of automobiles, has been incorporated by Carl D. Fisher, of Terre Haute, and others.

### FIRES

The Hardy Buggy Co., of Paducah, Ky., sustained a fire loss of \$30,000.

The vehicle establishment of M. C. Hale, in Tulsa, Okla., has been destroyed by fire.

The vehicle and implement house of James McGarry, in Imogene, Ia., has been destroyed by fire.

The stock of buggies, etc., of P. L. Metcalf & Bros., in Sargent, Neb., has been destroyed by fire.

The Himmelberger carriage and wagon plant at West Reading, Pa., was destroyed by fire June 16. Many vehicles, principally delivery wagons, were consumed by the flames.

Fire which started in the paint shop of the Sheffield Car Company's plant, Three Rivers, Mich., June 11, destroyed the tester shop, paint shop and warehouse of the company, entailing a loss of \$100,000. The plant will be rebuilt at once.

### SYSTEM IN WAGON SELLING

"Are you selling wagons fast enough?"

"Let us help you sell them!"

These are the words with which a prominent wagon manufacturer addresses the dealers. It is absolutely essential to the dealer that he sells wagons—this being his purpose in business—and the proposition is equally as vital with the manufacturer. While it is next to impossible for the manufacturer to sell to the public direct, and although competition is making it harder each season for the dealer to dispose of his wagons at a satisfactory profit, by uniting their efforts and working together the manufacturer and the dealer can bring about a decidedly gratifying increase in sales.

Twenty or thirty years ago a few manufacturers considered the troubles of the retail trade. They made the wagons and sold them outright to the dealer, and that ended it. It was up to the retailer to see that they were disposed of to the public. Some brands soon built up a reputation for themselves on their own merits. There was a demand for them, and they sold readily. But there is no reason why a new make of wagon may not be just as good as an old one, says a special article in *The Shop Salesman*.

Nowadays neither the manufacturer nor the dealer can afford to figure that every wagon sold will, in the course of time, sell a few more. The trade would find it unprofitable to allow only those wagons which have been put out to act as silent salesmen, backed by the loquacity of their owners, for evolving future business through this medium is so slow that it is not altogether certain. Selling wagons nowadays is as much a matter of aggressive sales tactics as it is of reputation.

Both old and new wagon manufacturers who are successful nowadays are getting business because they are keeping everlastingly at it. 'Way back in the '80's the wagon men did not show special persistency in working up consumers' demand, although concentrated effort along one accepted standard of exploitation was much in vogue. These old-time manufacturers

and dealers alike swore that the satisfied customer was their best advertisement.

It used to be that pretty nearly every retail merchant could afford to visit his manufacturer once or twice a year, to inspect the plant and survey the fine points of the output. But in these days of coast-to-coast selling systems, when one line alone is to be found in retail stores from the Atlantic to the Pacific and from the Lakes to the Gulf, it is not to be expected that the Texas agent of an Indiana manufacturer may take a few weeks off in order to dig up factory selling talk for himself.

The modern wagon retailer keeps his line constantly in the limelight. He is enabled to do this because his manufacturer advises him immediately of all new details in construction, selected quality of materials, new designers or workmen, improved plant equipment or other manufacturing data which tend to market a better vehicle. If the manufacturer sells 10,000 more wagons in 1912 than in 1911 he doesn't lose a minute in telling his dealers about it, for they in turn may post this concrete bit of selling talk where it will do the most good, impressing present owners and prospective purchasers with the fact that here is a vehicle which has the unqualified support of 10,000 more actual users than ever before.

The manufacturer's bond is typical of a hit-and-run play. It is the hit which anchors the retailer safely on second, prepared to score the winning run with a sale. To begin with, the dealer aids the manufacturer in preparing a list of all possible users of wagons in his (the retailer's) vicinity. To each of these prospects the manufacturer mails a letter and possibly a catalogue, telling in a concise and authoritative manner the exact advantages of his product. This initial form of approach serves as an entering wedge.

Next, the manufacturer requests all his prospects, culled by dozens of dealers, to fill out blanks designating their choices and requirements in the wagon line. All through the scheme thus far there is nothing binding upon the consumer—but the fact of the matter is that a manufacturer equipped with hundreds of these specified requests is in possession of approximately just so many real sales, which requires but little additional effort to close. The manufacturer has gained the most valuable of all vantage points, the primary hold upon the attention of men who, perhaps, have been postponing wagon purchases for years.

The manufacturer's bond is the final link in the chain. It closely resembles a bank note, being beautifully engraved, and is mailed to every consumer who has shown sufficient interest in wagon buying to specify his needs upon a blank to the manufacturer. The bond is representative of such actual value, aside from its face valuation of \$2 when applied to the purchase of any vehicle in the retailer's stock, that nobody would think of throwing it away. Even if it does not lead immediately to a wagon sale, which it does in nine cases out of ten, it is at least good for a look at the line in question and insures thorough publicity for that vehicle before competitors can get in on the prospective sale.

Such methods as this bring success. They do not always succeed at first, but the manufacturer's bond is one which has had effect in the piano trade, causing a tremendous number of sales during the past few years. The system is undoubtedly far from permanent, but it is good for a long period of stimulated business and thousands of real sales.

### PICNIC OF ST. LOUIS ASSOCIATION

The annual steamboat excursion of the Implement, Vehicle and Hardware Association, of St. Louis, took place on Saturday, June 15. The steamer Alton, which had been engaged for the excursion, left the wharf at 2 o'clock and returned late in the evening. The committee of arrangements headed by L. A. Gesserich, as chairman, did everything to make the outing a success. The members of the association and their friends turned out in good numbers.

# Recently Granted Vehicle Patents

## PATENTS PERTAINING TO THE CARRIAGE AND AUTOMOBILE INDUSTRIES

- 1,015,467—Wagon bottom and metal framework. Ernest D. Ainsworth, Tulare, S. D.  
 1,015,474—Covering for automobile radiators and hoods. Calvin Bullock, Denver, Colo.  
 1,015,295—Steering gear. George H. Chaplain, Leavenworth, Kas.  
 1,015,545—Creeping and anti-skidding device. William S. Craig, St. Marys, Ohio.  
 1,015,482—Starting mechanism for explosive engines. Orlando Ducker, Washington, D. C.  
 1,015,483—Lamp attachment for automobiles or the like. William R. Elwell, Chicago, Ill.  
 1,015,670—Bracket for automobile lamps. Benjamin F. and C. E. Ensley, Moulton, Iowa.  
 1,015,557—Wheel rim. Henry Gillette, Belpre, Kas.  
 1,015,682—Suspension spring for vehicles. Louis P. C. J. Jacquet, Neuilly-sur-Seine, near Paris, France.  
 1,015,386—Wind shield clamp. Charles H. Jockmus, Ansonia, Conn.  
 1,015,446—Automobile tire. James E. Knauss and C. Phinney, Hearldsburg, Cal.  
 1,015,761—Resilient wheel. Margaret E. Knight, Framington, Mass.  
 1,015,451—Spring tire for vehicle wheels. Archibald B. McQueen, Dunnellon, Fla.  
 1,015,700—Vehicle wheel. Arthur Mosso, Sonoma, Cal.  
 1,015,649—Attachment for vehicle springs. George S. Spreyer, Canon City, Colo.  
 1,015,366—Vehicle top bow clamp. Ralph Thompson, Brookline, Mass.  
 1,015,599—Pneumatic tire. George R. Vaughn, Jefferson City, Mo.  
 1,015,750—Headlight. Richard H. Welles, Kenosha, Wis.  
 1,015,412—Apparatus for the manufacture of axles. Curt Werckmeister, Hazelwood, Pa.  
 1,015,774—Guard for vehicles. Claire S. Barber, Waterville, Conn.  
 1,016,200—Wheel for motor vehicles. Abraham T. Beeler, Kansas City, Mo.  
 1,015,986—Speed changing mechanism. Herbert L. Beeler, Cincinnati, Ohio.  
 1,015,872—Vehicle brake. Arba I. Carnine, Fullerton, Cal.  
 1,015,785—Spring wheel. Joseph Corbin, Columbus, Ohio.  
 1,016,217—Tire setter. Charles A. Devero, Springfield, Ill.  
 1,016,134—Buggy-evener clevis. Ole A. Fladby, Rutland, N.D.  
 1,015,888—Vehicle wheel. Christain F. Heinss, Cincinnati, O.  
 1,015,808—Variable speed gearing. Abraham B. Landis, Enfield, Pa.  
 1,015,817—Engine starter. Leonard L. McLarty, Los Angeles, Cal.  
 1,016,096—Manufacture of resilient tires. George D. Rose, Manchester, England.  
 1,016,038—Wagon loader. Charles L. Samp, Chelsea, Mich.  
 1,016,107—Brace for vehicle canopy bows. Augustus A. Steckel, Trenton, N. J.  
 1,015,861—Vibrator arrestor for automobile steering mechanism. Worcester B. Warner, Cleveland, Ohio.  
 1,015,861—Vehicle wheel. Albert Williams, St. Louis, Mo.  
 1,016,812—Tire protector. Joseph L. Barnes, Des Moines, Ia.  
 1,016,871—Resilient wheel. Howard W. Brooks, Memphis, Tenn.  
 1,016,472—Tire. Tracy V. Buckwalter, Altoona, Pa.  
 1,016,914—Vise for holding vehicle lamps. Elmer V. Christians, Kingston, N. Y.  
 1,016,404—Direction indicator for vehicles. Christopher O. Crowley, London, England.  
 1,016,673—Vehicle wheel. William J. Cunningham, Philadelphia, Pa.  
 1,016,918—Making pneumatic tires. William W. Duncan, Watertown, Mass.  
 1,016,326—Resilient cushion for rear axles. Jew Garlick, Paterson, N. J.  
 1,016,558—Pneumatic attachment for vehicle wheels. Herman Garrison, Chicago, Ill.  
 1,016,631—Attachment for automobiles. Frederick A. Howard, Chester, Pa.  
 1,016,505—Portable platform wagon jack. Robert J. Jones, Barneston, Neb.  
 1,016,330—Vehicle wheel. Edward B. Killen, London, Eng.  
 1,016,750—Thortile mechanism for automobiles. Charles B. King, Detroit, Mich.  
 1,016,418—Pneumatic suspension for vehicles. William Kneen, London, England.  
 1,016,640—Combined cart and sled. Elmer F. Lind, St. Paul, Minn.  
 1,016,425—Whiffietree. Ferdinand A. Lubrecht, Pine City, Minn.  
 1,016,838—Steering mechanism for motor vehicles. Don C. Luce, Boston, Mass.  
 1,016,427—Clutch for automobiles and the like. Alfred B. Morse, South Easton, Mass.  
 1,016,846—Anti-skidding attachment for wheels. Charles H. Myers, Franklin, Pa.  
 1,016,514—Shock absorber. Frederik Nielsen, Boston, Mass.  
 1,016,709—Tire. John J. Patton, New York, N. Y.  
 1,016,518—Taximeter. Richard G. Popp, Paris, France.  
 1,016,580—Nut lock. Benjamin F. Purviance, Brookpark, Minn.  
 1,016,896—System for inflating pneumatic tires. Charles A. Rivers, Denver, Colo.  
 1,016,364—Means for automatically inflating tires of vehicle wheels while in motion. John I. Rodway and J. Esson, Johannesburg, Transvaal.  
 1,016,298—Spring wheel. Louis P. Sievers, Larchwood, Ia.  
 1,016,653—Bracket support for vehicle tops. Andrew G. Steinbrenner, Cleveland, Ohio.  
 1,016,905—Vehicle spring. John S. Thiell, St. Louis, Mo.  
 1,016,722—Dirigible lamp for automobiles. Robert H. Wallace, New Brighton, Pa.  
 1,016,723—Automobile tag holder. William B. West, Philadelphia, Pa.  
 1,016,810—Pneumatic suspension device for vehicles. John Williamson, Brooklyn, N. Y.  
 1,016,534—Spring wheel. Harmon E. Wirebaugh, Canton, O.  
 1,017,363—Wheel. James J. Adamsen, Brooklyn, N. Y.  
 1,017,126—Speed governor. Henry O. Barenz, Jackson, Wis.  
 1,017,128—Front axle drive. Rollo R. Bell, Wichita, Wis.  
 1,016,980—Controlling device for electric motor vehicles. Elmore W. Bender, Los Angeles, Cal.  
 1,017,198—Electric motor vehicle. Elmore W. Bender, Los Angeles, Cal.  
 1,017,246—Automatic starter for electric motors. John B. Calderwood, Milwaukee, Wis.  
 1,017,512—Vehicle spring. George Conderman, Hornell, N. Y.  
 1,017,516—Fore truck for vehicles. Samuel K. Dennis, Chicago, Ill.  
 1,017,259—Elastic wheel. Louis A. Garchey, Paris, France.  
 1,017,534—Wheelwright machine. Allen D. Gosett, Bureson, Texas.  
 1,017,407—Transmission mechanism for automobiles. Max H. Grabowsky, Detroit, Mich.  
 1,017,538—Engine starting apparatus. Edward A. Halbleib, Rochester, N. Y.  
 1,016,991—Elastic tire. Carl Herold, Brunn, Austria-Hungary.  
 1,017,000—Vehicle lamp. Joseph A. Joncas, Minneapolis, Minn.  
 1,017,553—Wheel. Edward C. Jones, Plymouth, Pa.  
 1,017,435—Shock absorber. Henry Luxembourger, Jr., Los Angeles, Cal.  
 1,017,302—Dumping wagon. Charles Lynch, Chicago, Ill.  
 1,017,456—Tire. William Pavlik, Bayport, N. Y.  
 1,017,016—Dumping wagon. Homer L. Phelps, Martinsburg, W. Va.  
 1,017,466—Vehicle wheel rim. Geo. T. Reichenbach, Portland, Oregon.  
 1,017,174—Automobile wheel. Philip J. Rivers, New Rochelle, N. Y.  
 1,017,598—Tire. Arthur Seelig, Wilmersdorf, Berlin, Ger.  
 1,017,330—Spring wheel. Frank Smith, Rossville, Ga.  
 1,017,335—Lock for steering wheels. Theodore D. Stanley, Detroit, Mich.  
 1,017,236—Vehicle wheel. Ivar L. Tvinde, Watertown, S. D.  
 1,017,488—Automobile seat. John B. Zimdars, San Francisco, Cal.  
 1,018,027—Resilient tire for wheels of motor vehicles, etc. Henry M. Bagdigian, Worcester, Mass.

- 1,018,154—Apparatus for controlling lights on automobiles. John L. Beck, Springfield, Mass.
- 1,018,030—Vehicle lamp. Charles L. Bettes, New York, N. Y.
- 1,018,232—Wheel tire. Herman L. Biener, New York, N. Y.
- 1,018,303—Metallic vehicle wheel. Hedley J. Donahoe, Chicago, Ill.
- 1,018,238—Detachable rim for pneumatic tires. Perry E. Doolittle, Ontario, Canada.
- 1,018,307—Resilient wheel. John W. Enright, New Orleans, La.
- 1,017,961—Anti-skidding device. Horace A. Fisk, Clinton, Mich.
- 1,017,660—Shock absorbing device. Claud H. Foster, Cleveland, Ohio.
- 1,018,179—Link for cross chains of antiskid devices. Frank A. Fox, Brooklyn, N. Y.
- 1,018,370—Speedometer. Louis A. Greenleaf, Dorchester, Mass.
- 1,018,049—Resilient tire. Melancthon Hanford, Malden, Mass.
- 1,018,052—Motor vehicle. Charles L. Hemenway and F. W. Updegraff, Covelo, Cal.
- 1,017,972—Two-wheeled dump wagon. Pliny E. Holt, Stockton, Cal.
- 1,017,973—Wheel for road vehicles. Edgar C. Horner, Clapham Park, London, England.
- 1,017,764—Wheel tire. Paul M. Kemter and A. W. Hentschel, West New York, N. J.
- 1,018,118—Dumping motor vehicle. George W. Lally, Boston, Mass.
- 1,018,119—Auto garbage truck. George W. Lally, Boston, Mass.
- 1,017,877—Change speed gearing. Abraham B. Landis, Waynesboro, Pa.
- 1,017,895—Spring wheel. George H. Langton and J. M. Kellerman, Los Angeles, Cal.
- 1,017,980—Elastic tire. Joseph Lazarus, Boston, Mass.
- 1,017,983—Vehicle. Albert E. Long, Brooklyn, N. Y.
- 1,018,248—Vehicle. Charles H. Martin, Worcester, Mass.
- 1,018,250—Vehicle spring. Michael M. McIntire, Cleveland, O.
- 1,018,206—Tire chain and guard. Ole J. Mikkleson, Ferryville, Wis.
- 1,017,988—Vehicle wheel with elastic spokes. Heinrich Munk, Berlin, Germany.
- 1,018,259—Spring wheel. William T. Murray, Baldwin, Kas.
- 1,017,900—Apparatus for deodorizing the exhaust gases of motors. Charles H. Phillips, Poughkeepsie, N. Y.
- 1,017,909—Traction and non-skid device. James W. Reid, New York, N. Y.
- 1,018,006—Resilient tire. Marshall C. Rogers, Williams, Cal.
- 1,017,809—Puncture closure for pneumatic tires and the like. Robert Sampson, Montreal, Quebec, Canada.
- 1,017,919—Spring wheel. Samuel P. Sanders, assignor of one-half to C. C. Grosshans, Aurora, Neb.
- 1,017,814—Resilient tire. Semple S. Scott, Chicago, Ill.
- 1,018,085—Automobile fender. Oscar A. Seppala, Chicago, Ill.
- 1,018,088—Wheel. Alfred J. Swing, assignor to The Auto Spring Wheel Company, Cincinnati, Ohio.
- 1,018,219—Variable speed power transmission mechanism. Twombly Motor Company, New York, N. Y.
- 1,017,939—Unloading device for motors. Allis-Chalmers Co., Milwaukee, Wis.
- 1,018,482—Vehicle frame. Herbert Cooper, Brooklyn, N. Y.
- 1,018,814—Vehicle tire. Henry H. Durr, Springfield, Ohio.
- 1,018,895—Tire. Edwin H. Freas, Philadelphia, Pa.
- 1,018,973—Wind shield. John Hofbauer, New York, N. Y.
- 1,018,428—Pneumatic wheel hub. Fred J. Koch, East St. Louis, Ill.
- 1,018,718—Vehicle wheel. Archibald A. MacDonald, New Glasgow, Nova Scotia, Canada.
- 1,018,626—Manufacturing anti-slipping tires for motors and other vehicles. Andre Michelin, Paris, France.
- 1,018,627—Vehicle brake. John G. Miller, Burlington, Iowa.
- 1,018,774—Vehicle wheel. Israel Pascal, assignor of six-tenths to M. Albert, Montreal, Quebec, Canada.
- 1,018,453—End gate fastening. Thomas T. Smith, Lots Creek township, Ringgold county, Iowa.
- 1,018,550—Tire holder. Andreas M. Sonnichsen, Milwaukee, Wis., assignor to Auto Parts Manufacturing Company.
- 1,018,454—Tire. Willard I. Twombly, assignor by mesne assignments to Twombly Motors Company, New York, N. Y.
- 1,018,798—Tent or awning attachment for vehicles. Durand Whipple and J. R. Fordyce, Little Rock, Ark.
- 1,018,467—Automobile wheel. Alfred R. Wylie and J. G. Wright, Big Springs, Texas.
- 1,018,469—Dumping wagon. Matashire Yoshine, Dairen, Manchuria, and C. N. Edge, Shanghai, China, said Edge assignor to said Yoshine.
- 1,018,470—Fender for motor vehicles. Wm. Young, South Bellingham, Wash.
- 1,018,735—Resilient tire. Frank Zimmerman, assignor to Francis Keil & Son, New York, N. Y.
- 1,019,591—Pneumatic hub. Charles E. DeBoos, Femora, New South Wales, Australia.
- 1,019,711—Bow coupling for carriage tops. Fred E. Gilbert, Jacksonville, Fla.
- 1,019,469—Combined anti-skidding and jack attachment for automobiles. Florence F. Heffernan, New York, N. Y.
- 1,019,254—Motor vehicle. Russell Huff, assignor, by mesne assignments, to Packard Motor Car Company, Detroit, Mich.
- 1,019,656—Spoke puller. John R. Kelly, Charleston, S. C.
- 1,019,062—Autotruck truck body. Henry Lehse, New York.
- 1,019,674—Tire inflation indicator. Alair J. de Lothiniere, Srinagar, India.
- 1,019,336—Vehicle spring. Daniel J. McCluskey, San Francisco, Cal.
- 1,019,176—Wagon brake. Thomas N. Moore, Coleman, Okla.
- 1,019,692—Buggy top. John A. Orr, Weston, Miss.
- 1,019,192—Vehicle wheel. Adolph Schick, Wheeling, W. Va.
- 1,019,536—Pneumatic wheel. Adam C. Schroeder, Derry Station, assignor of one-half to C. Proessler, Pittsburg, Pa.
- 1,019,380—Reissue, Whiffletree and trace connection. Wm. A. Stinson, Greenwood, Miss.
- 1,010,101—Wheel. John E. Strietelmeir, assignor to The Ideal Wheel Company, Cincinnati, Ohio.
- 1,019,560—Vehicle spoke. Lewis E. Tichenor and S. E. McNulty, Saratoga, Wyo.
- 1,019,286—Pneumatic tire. Willard I. Twombly, assignor to Twombly Motors Company, New York, N. Y.
- 1,019,571—Automobile horn. Louis West, Rochester, Minn.
- 1,019,211—Coat wagon. Thomas Wight, Jersey City, N. J.
- 1,020,260—Spring wheel. Elisha W. Burner, Luray, Va.
- 1,020,126—Locking device for detachably securing a rim to the felly of a wheel. Henry N. Carragher, Fall River, Mass.
- 1,020,080—Control mechanism for electric vehicles. Clyde E. Cochran, Cleveland, O., assignor to Anderson Electric Car Company, Detroit, Mich.
- 1,020,385—Road vehicle suspension arrangement. Leonard E. Cowey, Kew Gardens, England.
- 1,019,952—Unloading attachment for wagons. Alvin L. Cregar, Des Moines, Iowa.
- 1,020,140—Removable rim for vehicle wheels. Carroll D. Galvin, Merchantville, N. J., assignor of one-sixth to C. Jacobson, and one-sixth to E. S. Cochran, Washington, D. C.
- 1,019,896—Vehicle wheel. Hayes W. Henry, Melvern, Kas.
- 1,020,287—Wheel hub box. John D. Jones, Walla Walla, Wash.
- 1,019,973—Automobile tire. John F. Leib, Philadelphia, Pa.
- 1,020,209—Spring vehicle. Richard Liebau, Watervliet, N. Y.
- 1,019,976—Dirigible headlight. James L. Lowe, Moore, Mont.
- 1,020,043—Supplementary spring attachment and shock absorber for automobiles. John A. Mauck, Princeton, Ind.
- 1,020,106—Automobile starter. Hiram P. Maxim, Hartford, Conn.
- 1,019,832—Wheel. Wesley Phillips, Cape May, N. J., assignor, by mesne assignments, of one-half to H. Phillips, Greenwich, Conn.
- 1,019,845—Vehicle wheel. Nicholas Schenk, St. Louis, Mo.
- 1,019,846—Resilient wheel. Nicholas Schenk, St. Louis, Mo.
- 1,020,320—End gate for wagons. Charles Skidmore, Homer, Neb.
- 1,020,328—Spring wheel. A. J. Swarts, Kent, Wash.
- 1,020,376—Adjustable steering post for automobiles. Robert Symmonds, Jr., assignor to T. B. Jeffery, deceased, Kenosha, Wis.; K. E., C. T., and H. W. Jeffery, executors.
- 1,019,998—Reinforced axle. Garrison C. Thayer, Bartlesville, Okla.
- 1,020,336—Wind shield. Herbert H. White, Brookline, assignor to Auto Wind Shield Company, Cambridge, Mass.
- 1,020,069—Wheel construction. Robert B. Woodworth, Pittsburgh, Pa.
- 1,020,338—Vehicle wheel. Otto G. Worsley, Bangor, Mich.
- 1,020,678—Wheel rim. Frederic R. Barker, Boston, Mass.
- 1,020,797—Vehicle wheel-rim. Heinrich Bussing, Brunswick, Germany.
- 1,020,478—Wheel rim. Israel J. Carpenter, Marlboro, Mass.
- 1,020,889—Motor controlling mechanism for self-propelled vehicles. Alfred H. Daehler, Los Angeles, Cal.
- 1,020,804—Tire. Samuel A. Deatherage, Richmond, Ky.
- 1,020,901—Wheel. Pierre Haerst, Chicago, Ill.
- 1,020,823—Dumping wagon. George W. Holland, Tombstone, Arizona.
- 1,020,607—Motor truck. Charles W. Hunt, deceased, New York, N. Y.; K. H. and C. W. Hunt, and G. S. Humphrey, executors.
- 1,020,707—Steering device for automobiles. Herman Lemp, Lynn, Mass., assignor to General Electric Company.
- 1,020,518—Motor vehicle. Eric S. Sandgren and C. F. Case, assignors to Oliver Motor Car Company, Detroit, Mich.
- 1,020,450—Vehicle wheel. Charles J. Sandrik, East Pittsburg, Pa.



- 1,020,665—Auto vehicle dump box. Fred T. Sherman and H. Goetz, Seattle, Wash.  
 1,020,851—Wagon brake. Elmer Spires, Oklahoma, Okla.  
 1,020,723—Pivoted support for vehicle wheels. John S. Spuhr, Denver, Colo.  
 1,020,726—End gate. Riley M. Sturdevant, Falls City, Neb.  
 1,020,934—Draft equalizer. David P. Sweger, Chambersburg, Pa.  
 1,020,464—Automobile tire. Winfield S. Temple, Sidney, Ill.  
 1,020,524—Dump wagon. Marquis J. Todd, assignor to Buffalo Pitts Company, Buffalo, N. Y.  
 1,020,465—Auxiliary steering device. John M. Topper and G. H. Chaplain, Leavenworth, Kas.

### Designs

- 42,183—Automobile horn. Saverio Calautti, New York, N. Y.  
 42,186—Vehicle body. Charles E. J. Lang to The Rauch & Lang Carriage Company, Cleveland, Ohio.  
 42,276—Automobile bow rest. Joseph Erret, Cleveland, O.  
 42,278—Vehicle body. Oliver P. Fritchle, assignor to The Fritchle Automobile and Battery Co., Denver, Colo.  
 42,317—Front axle housing for vehicles. Wm. H. Douglas, Belleville, N. J.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

## RECENTLY EXPIRED PATENTS OF INTEREST TO THE VEHICLE INDUSTRY

### Patents Expired June 11, 1912

- 540,638—Sugar cane wagon. Cyprien L. Comeau, New Orleans, La.  
 540,648—Road vehicle. Charles E. Duryea, Peoria, Ill.  
 540,709—Carriage axle. Samuel R. Bailey, Amesbury, Mass.  
 540,995—Dumping wagon. Isaac Levy, Philadelphia, Pa.  
 541,068—Axle spindle. Adam J. Pistner, St. Marys, Pa.  
 541,049—Pneumatic tire. Dean W. King, Jr., Denver, Colo.

### Patents Expired June 18, 1912

- 541,075—Pneumatic tire. Charles H. Davids, Brooklyn, N. Y.  
 541,094—Wagon rod. David W. Jones, Kearney, Neb.  
 541,196—Antifriction bearing. William H. Wright, Buffalo, N. Y.  
 541,198—Draft equalizer. Oswald Zoeller and Fred Zoeller, Oakland, Iowa.  
 541,237—Ball bearing for vehicle wheels. Edward A. Jones, Tonawanda, N. Y.  
 541,328—Tire tightener. Jasper N. Jennings, Portland, Ore.  
 541,396—Tire for vehicle wheels. Frank Sulley and William E. Dowsen, Nottingham, England.  
 541,440—Tire tightener. John W. Johnson, Leighton, Ala.

### Patents Expired June 25, 1912

- 541,485—Pole head for carriages. Edward Kipling, London, England.  
 541,516—Vehicle wheel. Edwin D. Wassell, Pittsburg, Pa.  
 541,601—Vehicle seat. William F. Downey, Washington, D. C.  
 541,704—Platform spring for wagons. Clinton A. Weed, Racine, Wis.

### Patents Expired July 2, 1912

- 542,064—Device for oiling vehicle axles. Charles T. Moorman, Packwood, Iowa.  
 542,076—Fifth wheel for vehicles. Lewis Burg, Dallas City, Illinois.  
 542,116—Wagon brake. William J. Stephenson, Edna, Kas.  
 542,184—Wheel. James M. Combs, Auburn, Neb.

The above lists of patents are furnished by Davis & Davis, solicitors of American and foreign patents, Washington, D. C., and St. Paul Building, New York City.

## THE EVOLUTION OF THE SALESMAN

Taking all the vast mass of humanity alive in our world today, we might liken it to one vast departmental store and the entities therein, in their relations to one another, as salesmen and customers. In every relation existent between them, when one has something that the other needs, and one wants what the other has, there must exist a natural result—a sale. In a recent address, W. G. Tippet, of the Kingman Plow Company, quoted some interesting parallels and gave some sage advice on the question of selling. He says:

"It does not matter whether it is the doctor who sells his knowledge of medicine; the lawyer his knowledge of law; the engineer his knowledge of mechanics; the merchant his wares; or the laborer his hire; in every walk and vocation in life there

is, to a greater or lesser extent, that part in the offering or exchanging, in the buying and selling, in the giving and taking, one from the other, or to the other, an element of salesmanship.

So that in every pursuit of life, where are the things that are sought for and the things that are offered, there is an interchange, a process of bargaining, buying and selling—buyer and salesman. The salesman's part is the most important, and the cultivation of the forces that enter into the science of selling is one of the most important studies of our modern life.

The age has advanced, the "drummer" of the olden days has gone; the whole-souled, easy-going, good-natured, storytelling drummer has passed into history. The evolution of the drummer into the traveling salesman has been swift and sure. The salesman of today is a business man, keen, alert, wide-awake—the man who thinks.

Give me the bright, keen-eyed salesman, who is at home in the office, or across the desk of the biggest and most successful merchants of the country; who can, by thoroughly acquainting himself, tell him approximately the number of buggies, wagons, plows, cultivators, reapers, mowers, engines and other articles sold out of that town per annum, should be an implement salesman; or stoves, lawn mowers, screen doors, washing machines, etc., should he be a hardware salesman.

Every live and up-to-date merchant will readily give his time and attention to the man who is well posted in the business and will often realize that he is not getting his share of the trade.

It is the salesman, the thinker, who can hand such information in a nice, smooth manner; and, in so doing, the merchant is unconscious of the foundation the salesman is laying for placing an order and building up his business.

## DEFIANCE MACHINE WORKS PICNIC

The employees of The Defiance Machine Works, Defiance, Ohio, their wives and sweethearts held their first annual picnic, July 4th, at beautiful Island Park, in the Maumee. Weather conditions being ideal, considerable over a thousand people enjoyed the hospitality of the firm to the utmost. A regular program prepared by the program committee was carried out which consisted of a ceremonial opening in the spacious auditorium and various interesting contests for the men, women and children. The address of welcome by C. H. Kettenring, treasurer and general manager of the firm, and address, "The Brotherhood of Man," by Charles Seymour, were received with much pleasure. Music was furnished during the entire day by the Sixth Regiment Band, which added materially to the completeness of the occasion.

It is the intention of this firm to make these family picnics an annual event, thereby bringing the employees and their families in closer touch with each other to the end that a full spirit of harmony might prevail at all times.

## PEORIA CONVENTION DATES

Directors of the Illinois Retail Implement and Vehicle Dealers' Association met at Bloomington June 7 and laid plans for the 1912 convention to be held as usual in Peoria. The dates selected are October 1, 2 and 3. The second annual exhibition of the National Implement and Vehicle Show Company will be in progress at the same time and place.

H. B. Dodd, of Akron, formerly with The Diamond Rubber Co., has recently received a patent on a tire which he calls the "Dreadnought," the claim for which is that it does away with the inner tube. The casing is all in one piece, which grooves the bead which the tire fits. The bead is held in place by a steel rim which is clamped over the bead by bolts from the outside. The Dreadnought tire differs from the ordinary tire in that the strips of fabric in it lap around the bead and go back into the body of the tire, and are thus vulcanized. Mr. Dodd is now making a test trip of the tires.

## BRAZIL'S RUBBER FORESTS ARE VAST

The vast rubber forests of the Amazon Valley, a zone of 1,000,000 square miles, have been explored and exploited in only a small way, the great drawback being that the better the conditions are for wild rubber the worse they are for human habitation. Each year some new stream or tributary whose banks are heavily wooded with rubber trees is discovered, but away from the streams are vast forests of which no clear estimate can be made. The reason for this is the density and dampness of these great stretches, and the difficulty of reaching them. In fact, the difficulties are apparently so unsurmountable that great plantations of rubber trees are being grown in Brazil in regions easier of access.

## C. H. A. T. CONVENTION

The twenty-second annual convention of The Carriage, Harness and Accessory Traveling Salesmen's Association will be held at Atlantic City, N. J., at the time of the Carriage Builders' National Association convention, September 23 to 28.

The annual meeting and election of officers will be held at Marlborough-Blenheim Hotel, Tuesday evening, September 24, at eight o'clock.

Wednesday evening will be known as "C. H. A. T. Night," when the shore dinner will be pulled off at the Marlborough-Blenheim, where arrangements have already been completed.

## TIMKENS TO MOVE TO TOLEDO?

The Timken-Detroit Axle Co., of Detroit, Mich., has bought a tract of land in Toledo, between Central avenue and the Lake Shore & Michigan Southern Railroad, upon which a branch plant of the concern will be located. It is rumored that it is the intention to move the main plant to Toledo. The Detroit factory manufactures roller bearings and the company employs several thousand men.

## ENGLAND LEAVES BAY STATE FOR MICHIGAN

The England Mfg. Co. has removed from Amesbury, Mass., to Detroit, Mich., where it is occupying the factory at 1559 Jefferson avenue, formerly used by the King Motor Car Co. The England Mfg. Co. produces metal stampings and automobile accessories. J. Albert Davis, who at one time was of the lamp making firm of Gray & Davis, is prominently identified with the England company.

## TIMKEN MAGAZINE

Timken Magazine, Vol. 1, No. 1, is out. In addition to an account of the making of a Timken axle, it takes up the construction of Timken roller bearings, describing several refinements of the process and ends with the publication of news concerning the bearing and axle factories and business.

## CINCINNATI CARRIAGE MAKERS' OUTING

The carriage makers of Cincinnati, O., had their annual outing on Saturday, June 15. For the occasion they chartered the steamer Kentucky, with a good orchestra on the deck, plenty of bottled goods and otherwise in the hold. A chicken dinner was served at the clubhouse on Laughery Island.

## BOOKLET ON STANDARD BEARINGS

An attractive booklet devoted to the features of Standard bearings, to their construction and their various applications is being sent out by the Standard Roller Bearing Company, Philadelphia, Pa. The various types of bearing made by the company are illustrated.

## OBITUARY

**Thomas Edmond Hayes**, 43, president of the Howell-Hinchman Company, died at his home in Middletown, N. Y., on June 17. His death removes one of the best known men in the leather industry. Mr. Hayes received his education at Wallkill Academy and the DeGarmo Institute at Rhinebeck, N. Y., afterwards graduating from the Ossining Military Academy at Ossining-on-the-Hudson in 1888. Upon completion of his academic training, he returned to Middletown where he has since been actively engaged in business. His business interests, however, were wide, extending to various enterprises throughout the country. On April 19, 1900, Mr. Hayes married Miss Bertha Morgans, a daughter of William Thomas Morgans and Sophia Elizabeth Inderlied, of Middletown, N. Y. Mr. Hayes is survived by his wife and one daughter. Upon the death of his father, Mr. Hayes became president of the Howell-Hinchman Company, to which he has devoted his energies with a marked degree of success. The remarkable development of the company since he became its head attests the large measure of business acumen and industry displayed during his business career. A most striking example of his conservative business policies and far sightedness in perpetuating the strong position now held by the Howell-Hinchman Company, is the fact that about two years ago Mr. Hayes insured his life for \$100,000 for the benefit of the company of which he has so long been the head. Despite all reports to the contrary, The Howell-Hinchman Company will continue to operate under the same interests and policies which have built up the large trade that the concern now enjoys.

**Frederick W. Altman**, a veteran in carriage and wagon manufacturing died June 26, in Buffalo, N. Y. For 36 years he had been in the business, though he retired from active participation in his business twenty years ago. His death came after a long period of illness. Mr. Altman was a native of Germany. He was educated in the public schools of Berlin and came to this country when 28 years old, locating at Buffalo and engaging immediately in the carriage and wagon manufacturing business. Surviving him are three daughters and four sons.

**Marion D. Welsh**, 71, an old time wagon man, died in Omaha, Neb. In early life he located in Racine, and in turn was identified with the J. I. Case Threshing Machine Company, the Fish Bros. Wagon Company, the Mitchell & Lewis Company, and the Cortland Wagon Company, being secretary of the latter company. Locating in Lincoln, he founded the Lincoln Co-op-erage Company, and a few years ago founded the Omaha Co-op-erage Company.

**Jacob L. Graham**, 57, president of Ligonier Carriage Company, Ligonier, Ind., died at his home in that city on June 4, after a lingering illness. He was noted as among the successful business men of his state. He was a member of the Masons, Knights of Pythias, and Elks, and his funeral was under the direction of his Masonic Lodge.

**William Talbot**, 50, wagon manufacturer of St. Charles, Minn., and widely known throughout that section, died June 10, after an illness of a few days. For thirty years he was connected with the Talbot Wagon Company.

## Wants

Help and situation wanted advertisements, one cent a word; all other advertisements in this department. 5 cents a word; Initials and figures count as words. Minimum price, 30 cents for each advertisement.

### PATENTS.

**Patents**—H. W. T. Jenner, patent attorney and mechanical expert, 608 F St., Washington, D. C. Established 1883. I make a free examination and report if a patent can be had and exactly what it will cost. Send for circular.

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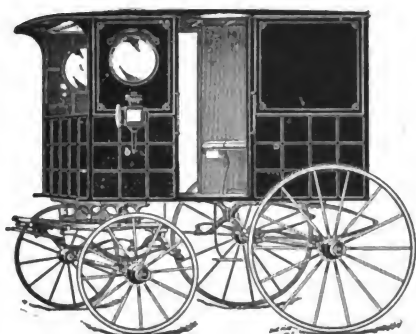
# LEWIS SPRING & AXLE CO.

JACKSON, MICHIGAN

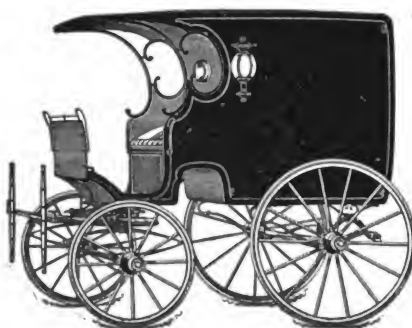
# SPRINGS

# LEWIS SPRING & AXLE CO.

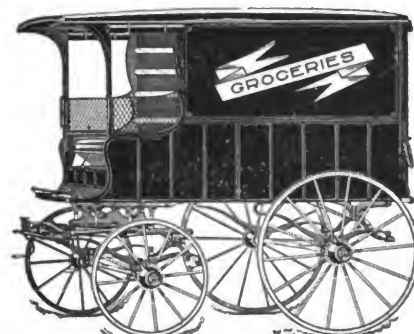
JACKSON, MICHIGAN



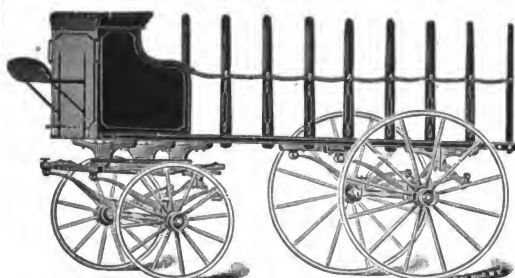
No. 112.—Milk Wagon.



No. 111.—Altman Wagon.



No. 113.—Grocery Wagon.



No. 122.—Flour Truck.

## Electrotypes

of the vehicles presented on this page will be forwarded on receipt of

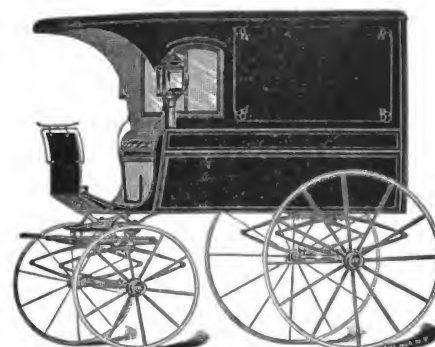
**75 cts.**

for each cut, to any address. Postage prepaid.

## Catalogue

containing nearly 200 illustrations of carriages, wagons, sleighs, and miscellaneous cuts will be sent upon application.

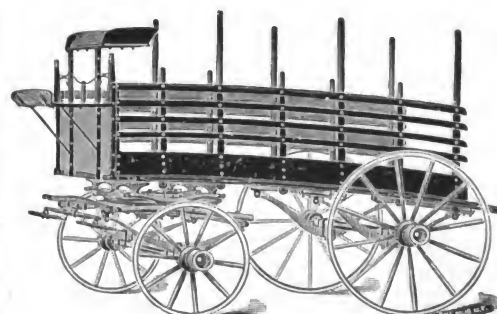
**Trade News  
Publishing Co.**  
24-26 MURRAY ST.  
NEW YORK



No. 115.—Delivery Wagon.



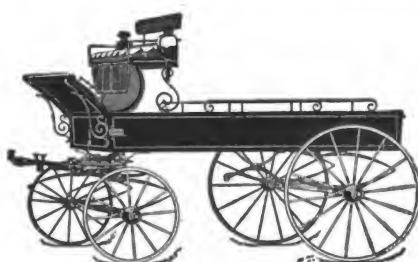
No. 116.—Milk Wagon.



No. 117.—Merchandise Truck.



No. 114.—Delivery Wagon.



No. 124.—Delivery Wagon.



No. 118.—Ambulance.

## ADVERTISEMENTS CLASSIFIED

### AXLES

Frost Gear & Machine Co., Jackson, Mich.  
Lewis Spring & Axle Co., Jackson, Mich.  
Timken Roller Bearing Co., Canton, O.  
**BODIES, SEATS, ETC. (Wood and Metal)**  
Burling, W. G., Philadelphia, Pa.  
Crescent Body Works, Reading, Pa.  
Keystone Sheet Metal Co., Ambridge, Pa.

### BOLTS AND NUTS

Columbus Bolt Works, Columbus, O.

### BOWS (Automobile and Carriage)

Delphos Hoop Co., Delphos, O.  
Millikan, G. W., Muncie, Ind.

### BUCKRAMS

Landers Bros. & Co., Toledo, O.

### BUGGIES

Lourie Mfg. Co., Springfield, O.  
Sturtevant-Larabee Co., Binghamton, N. Y.

### CARRIAGE FORGINGS

Columbus Bolt Works, Columbus, O.  
Eccles Co., Richard, Auburn, N. Y.  
Herbrand Co., Fremont, O.  
Wilcox Mfg. Co., D., Mechanicsburg, Pa.

### CARRIAGES AND WAGONS (Finished)

Lourie Mfg. Co., Springfield, O.  
Sturtevant-Larabee Co., Binghamton, N. Y.

### CARRIAGE, WAGON AND AUTOMOBILE HARDWARE, SUPPLIES, ETC.

Dowler, Chas. L., Philadelphia, Pa.  
Gifford & Son, John A., New York City.  
Landers Bros. Co., Toledo, O.  
Payne Co., E. Scott, Baltimore, Md.

### CUSHION MANUFACTURERS

Dowler, Chas. L., Philadelphia, Pa.

### COLORS

Pierce Co., F. O., New York City.  
Sherwin-Williams Co., Cleveland, O.  
Valentine Varnish Co., New York, Chicago,  
Boston.  
Willey Co., C. A., Hunters Point, N. Y.

### DASHES, FENDERS, ETC.

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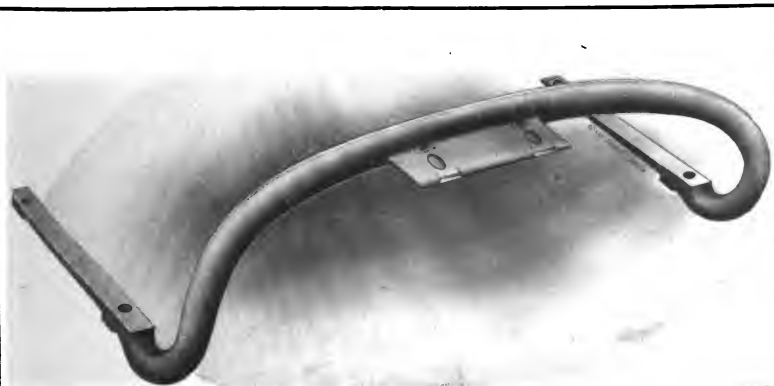
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satory  
award  
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for indus-  
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subject to  
accident—  
male or fe-  
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Chapter V. Hazardous Occupations—Comparative Hazard of Industry and Farm.

Chapter VI. Prevention of Accidents, Cause and Cure of Injuries, European Safety Museum (Accident Prevention Institutions).

Chapter VII. Cost of Accident Compensation Insurance in Germany in Comparison

son with similar rates in the United States.

Chapter VIII. Employers' Liability in Great Britain Prior to the Compensation Acts.

Chapter IX. The Introduction of the Compensation Principle by the Acts of 1897 and 1900, and the Investigation of the Operation of this Legislation by the Departmental Committee of 1904.

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Chapter XI. British Compensation Statistics. The Neglect to Record the Operation of the Earlier Acts Incompletely Remedied by Partial Information Required Concerning the Act of 1906.

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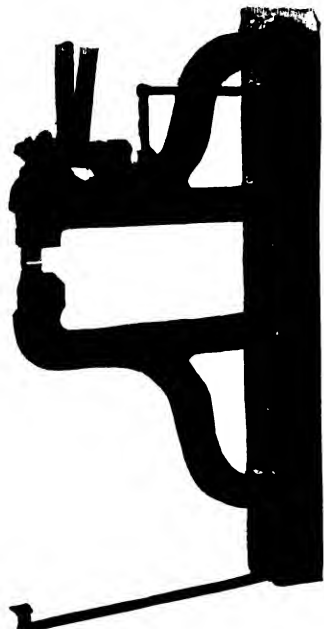
What is total disability  
as applied to the injured  
worker?

How can the "ambu-  
lance chasing" practi-  
tioner be eliminated?

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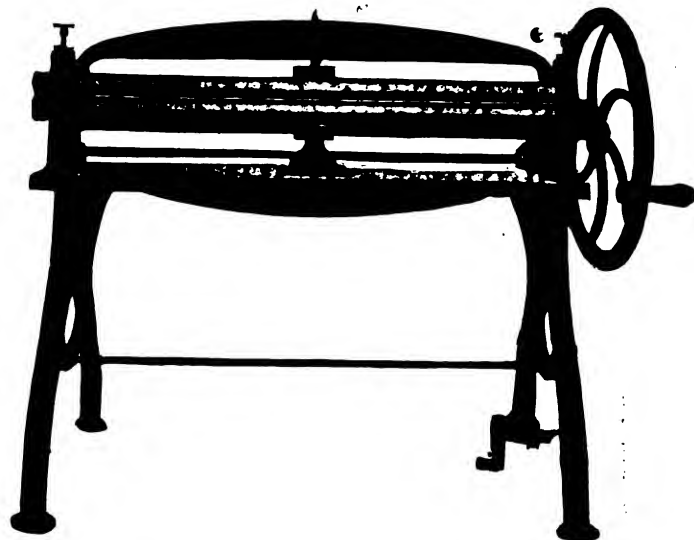
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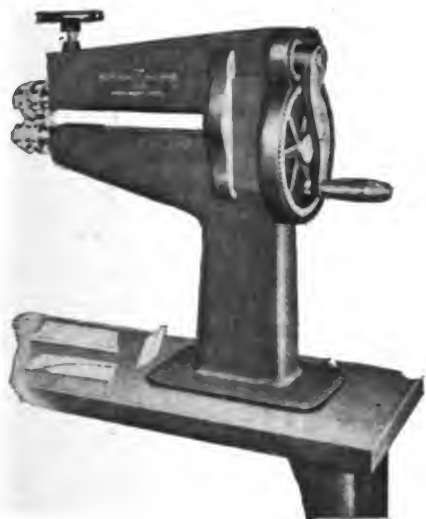
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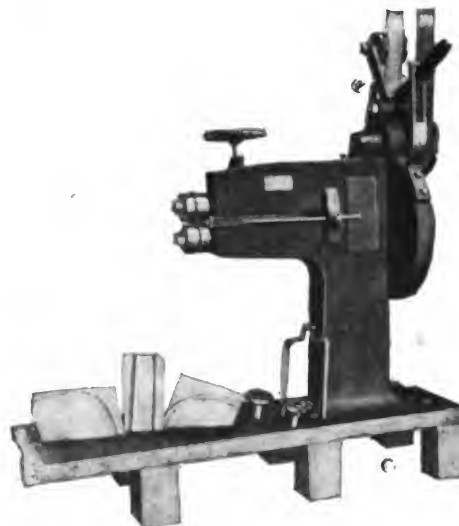
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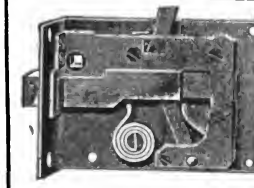
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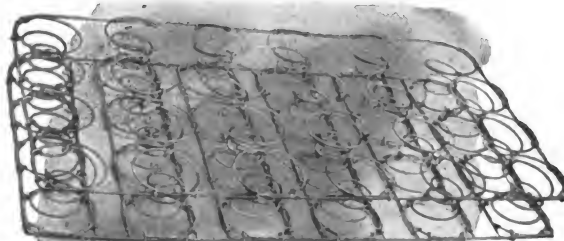
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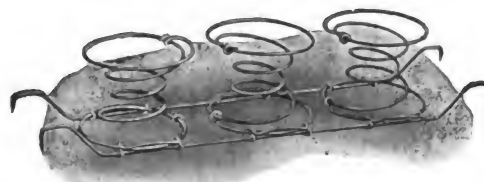
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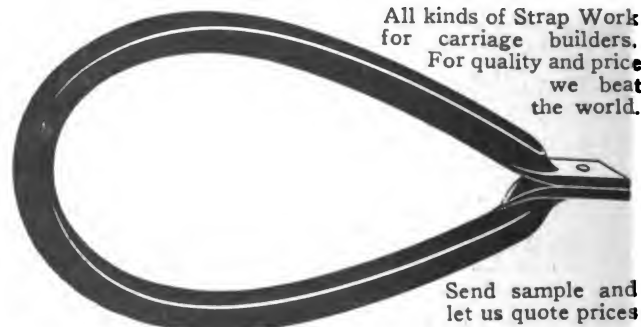
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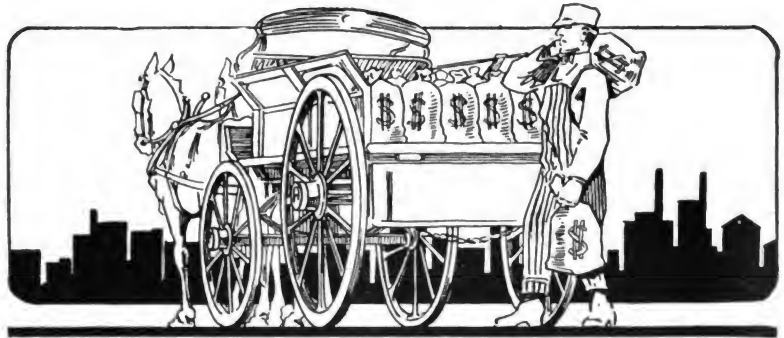
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Will form moulding or beading any size or shape, cuts all metals, will fold in wire around edge of metal and turn over flanges, etc. Intended for use in factories and shops where small machines are needed for much of the work that can be done quicker and easier than on large power machines, and also for many shops where they have not power or facilities or do not wish to put in the large, powerful and more expensive machines.



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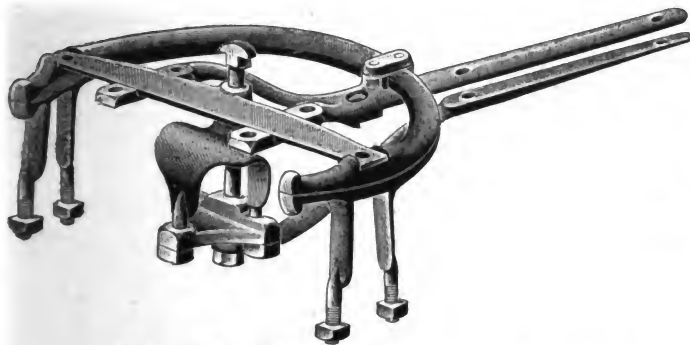
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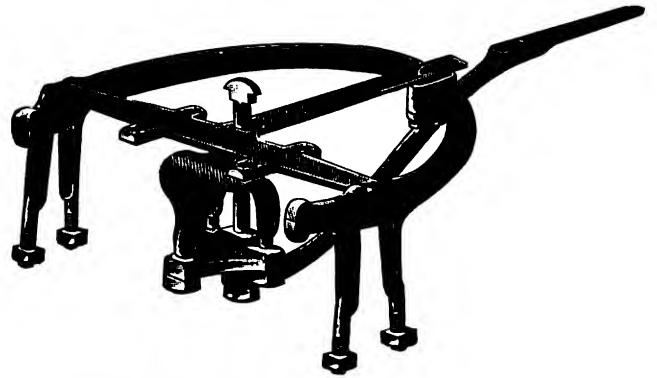
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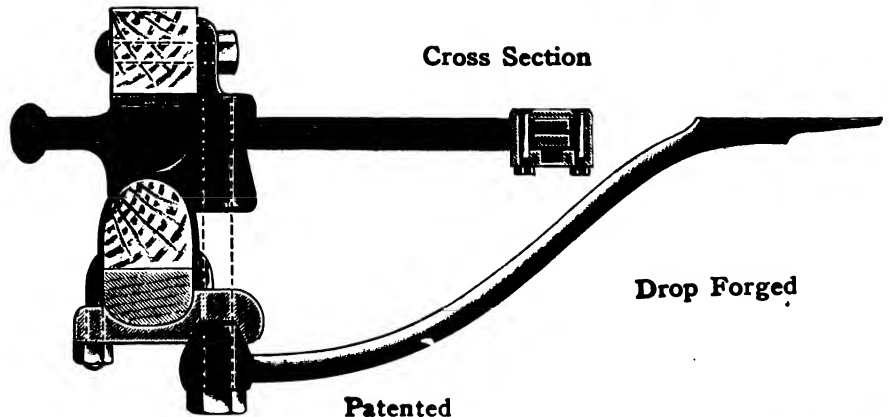
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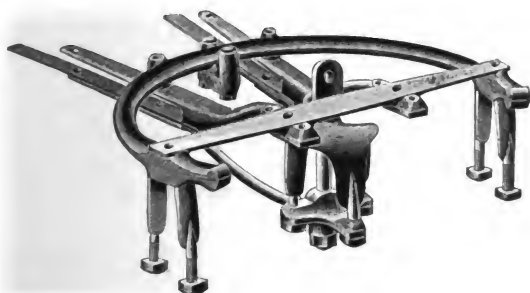


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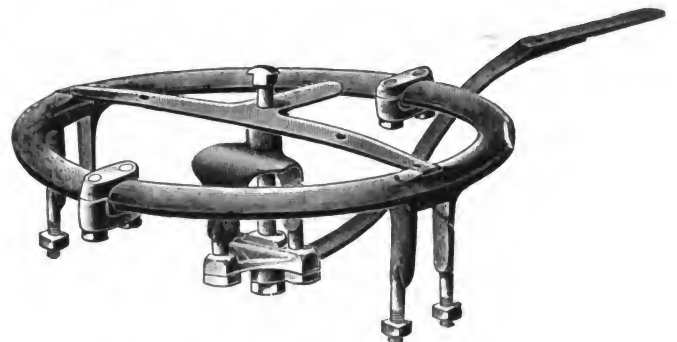
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# The Hub

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AUGUST, 1912

No. 5

## THE TRADE NEWS PUBLISHING CO. OF N. Y. Publishers of THE HUB

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### FOREIGN REPRESENTATIVES:

FRANCE.—L. Dupont, publisher of *Le Guide des Carrossiers*, 78 Rue Boissiere, Paris. Subscription price, 15 francs, postpaid.

GERMANY.—Gustave Miesen, Bohn a Rh. Subscription price, 12 marks, postpaid.

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## Specialization Tends to Sameness.

In the automobile body-building industry with us the desire to reduce cost by producing quantity, while admirable in its results from a certain point, surely does wipe out all originality and distinctiveness of design. The automobile as at present seen in the repositories is just a locomotive and train of cars, so far as originality of design is concerned.

A limousine body hung up on a low priced chassis, barring better trimming, painting, and such details, is the very dromio of the same body on a car of much greater price and great reputation.

To see them trundling down the street, about the only distinction is the color of the paint. The whole outfit is a distinctly factory product and shows it frankly. It has the same distinction as a factory-built buggy that is made by the thousands.

This is no demerit if the price is to be in accord with the wholesale way of turning out the product, but the art of specialization seems to kill all originality.

We are told that manufacturing processes are now highly evolved, and the consequent cheapening of costs

very material. But the cost of selling must yet be very high, judging by the prices that are quoted for the articles that are made so cheaply.

One maker of repute has come out with the statement that he has had expert accountants figuring on the cost of the cars of some of his friends who are making cars as good as can be (that is, by implication, as good as his), and he states that he has a compilation which he would like to have all interested read to the effect that \$602 is the excess over the price of his car that makers are bound to put on for overhead charges that range all the way from bonded indebtedness to plant depreciation. This is a tidy sum for the buyer to pay for something that is not car.

This may show why standardization is as necessary as a life preserver to a man overboard who cannot swim, and why there cannot be much originality of design.

We do not even see how any progress in design can be made. It is just refining and cheapening in cost the present model as if it was the last word—the ultimate.

## The Automobile Booster.

We have had all sorts of the vagaries of salesmanship, from the wine peddler who was always ready to "cut into the grape" with a friend and incidentally always the one certain brand, to cigarette pushers, but finally the automobile has had the call in the same sort of service in the large cities.

The automobile "booster" is a most gentlemanly, debonaire fellow, who is just a dear old chappie who wants you to take a ride in his (?) car for the joy of it, it is such a sweet running affair, and so and so on during the ride when the merits of the car are developed by expatiation. This lays all over a vulgar "demonstration," don't you know, and it has not the least look of being filled with the right kind of paid for information anent the car.

These tactics were mighty expensive methods of selling "wine," and we should suppose the needs are rigorous when they have to be resorted to to sell automobiles.

## Motor Car Repairing.

The repair of motor vehicles is second in importance only to that of manufacture, but bears its own crop of special difficulties and points which do not arise in manufacture, and it is some of these that an author has endeavored to deal with.

Every car built will, sooner or later, require repairs

of a more or less extensive character, in proportion to the treatment it has received, the work it has done, and the quality of the material and workmanship that has been put into it in the first place.

The cost of repairs is estimated to be a quarter of the price of the new cars.

Repairs are naturally much heavier in proportion to first cost in the case of cheap cars than in that of expensive ones. The same care and attention must be given to both, and the cost of labor in each case is, or should be, the same, although the amount may vary.

The most important thing to bear in mind in this connection is that on the manner in which the repairs are carried out will very largely depend the success of any car, and the satisfaction that it will give its owner. Very frequently the owner of a good car is met with who states that his car was all that could be desired until it paid its first visit to the repair shop, and often this shop is situated in the makers' works, or under their control. Now, the modern motor car is hard to wear out, and is generally in very good condition, relatively, when the owner sells it. The trouble with these cars, therefore, is not due to wear, but to the fact that the repairs have not been well executed.

## 48, Count 'em.

A new "model" of an automobile has just made its bow from the workshop of a distinguished designer that is heralded as the very cream of the collaboration of forty-eight distinguished (also) engineers. Just think! 48, count 'em, 48!

Now let us feast on the new ideas of the 48. What are they? Anything radical in engine or chassis improvement over present practice, anything new in body design? No, "nope." Just a file in the hands of the 48, and each one refining down the details to a greater perfection of established ideas.

It does not seem to us that this marks a great achievement for the composite brain of 48 specialists! Perhaps too many cooks spoil the broth.

## Buggy Business Not So Good.

Owing to backward and unusual weather conditions in the early part of the year the wholesale builder of vehicles has not had as good a season as he was led to expect from the results of the previous year.

Some report a falling off of twenty-five per cent. in output, some less, and some much more. Perhaps 25 per cent. may prove to be an average.

Many put stress on the competition of the motor car as a large factor in results, but when the business was good last year the same competition was in evidence, and not considered harmful, so probably it is the "goat," merely, this season.

Fact is, the motor car men are having their troubles. It is rather harder to get rid of high-priced goods now than at any previous time, and the spur of competition is digging in deep.

There must be rises and falls in the tide of business

brought about by various causes that do not in the end affect the general advancement but do bring about temporary setbacks.

All developing countries spell continuous progress, but the blind, fatuous optimist thinks progress must not stop for breathing spells now and then.

## C. B. N. A.'S FORTIETH ANNUAL CONVENTION AND EXHIBITION

To Be Held at Million Dollar Pier, Atlantic City, N. J., September 23-27, 1912

During the month of September practically all of the railroads provide a special rate on tourist or excursion tickets to Atlantic City, covering nearly every section of the country. The agents of these roads have reduced rate tickets on sale or will procure them when applied for. For your convention trip you can buy these tickets as early as September 1, and from then all through the month up to the dates set for the convention. The tickets are good for 30 days from the date of purchase.

The conditions under which these tickets are sold are very favorable for convention visitors, as plenty of time is allowed, not only to attend the convention and exhibition, but also to spend as many days as one likes enjoying the delights of the most renowned seaside resort in the world. Besides, you get the concession from regular rates at the most favorable time of all the year to visit Atlantic City.

As to the convention itself, the addresses and discussions will be of such a nature that no member of the association can afford to miss them. At the exhibition there will be shown the latest and best that the manufacturers of vehicle supplies can furnish for the necessities of your business.

The entertainments being arranged to accompany this year's meetings will be above the average of such affairs, and the annual reception and banquet, at the Marlborough-Blenheim, will be up to the usual high standard.

Best of all, at the convention room, in the exhibition hall and at the hotels, you will meet your brother craftsmen in friendly, social intercourse. You will enjoy seeing them and hearing them talk, and you will get a great deal of information regarding the vehicle business in all parts of the country.

If you want to be instructed and amused; if you want to enjoy the sight of the old ocean and the touch of health-giving sea breezes; if you want to meet old friends and make new ones; if you are interested in the newest things that concern your business—you can get all of these, and more, by coming to the fortieth annual convention and exhibition of the C. B. N. A., at Atlantic City next September. Decide now and make your arrangements early. You musn't miss it.

HENRY C. McLEAR, Secretary.

## C. H. A. T. WILL HAVE ANOTHER SHORE DINNER

The Carriage, Harness and Accessory Travelers' Association will hold their annual convention in Atlantic City, Tuesday night, September 24, during the week of the C. B. N. A. convention, also the convention of the National Carriage Dealers' Protective Association.

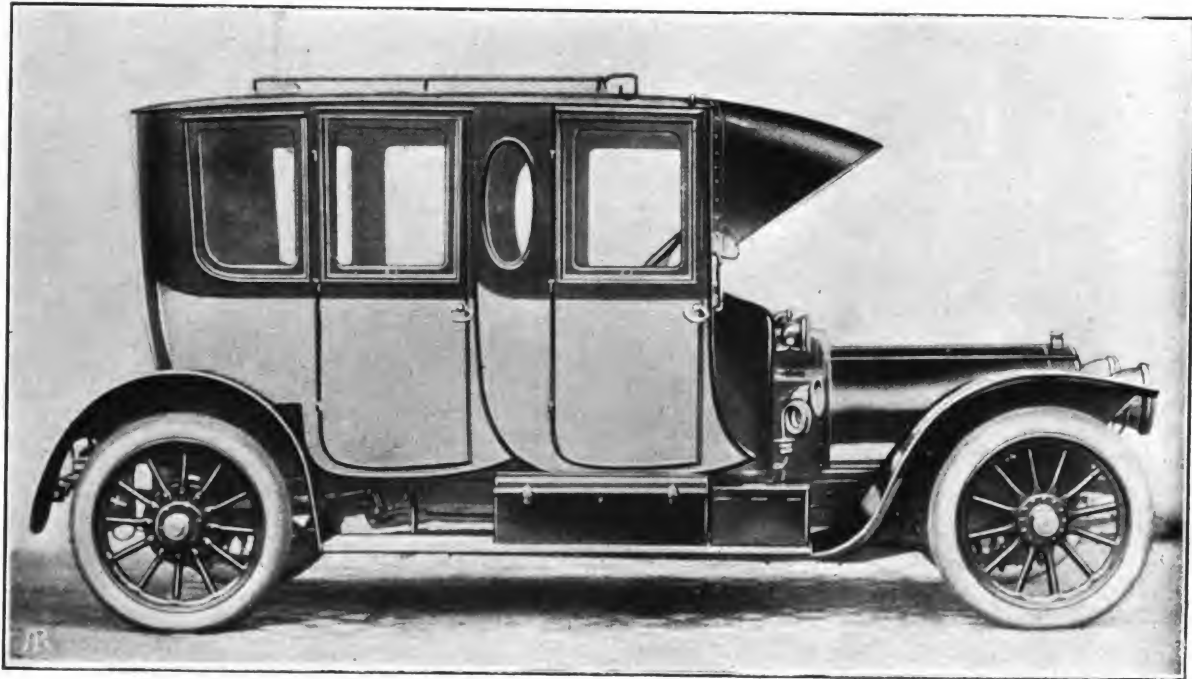
Last year, the shore dinner was such a success that the committee have decided to repeat the performance. Arrangements have been completed with the Marlborough-Blenheim Hotel for the serving of a short dinner on the evening of September 25.

He that gives to be seen would never relieve a man in the dark.

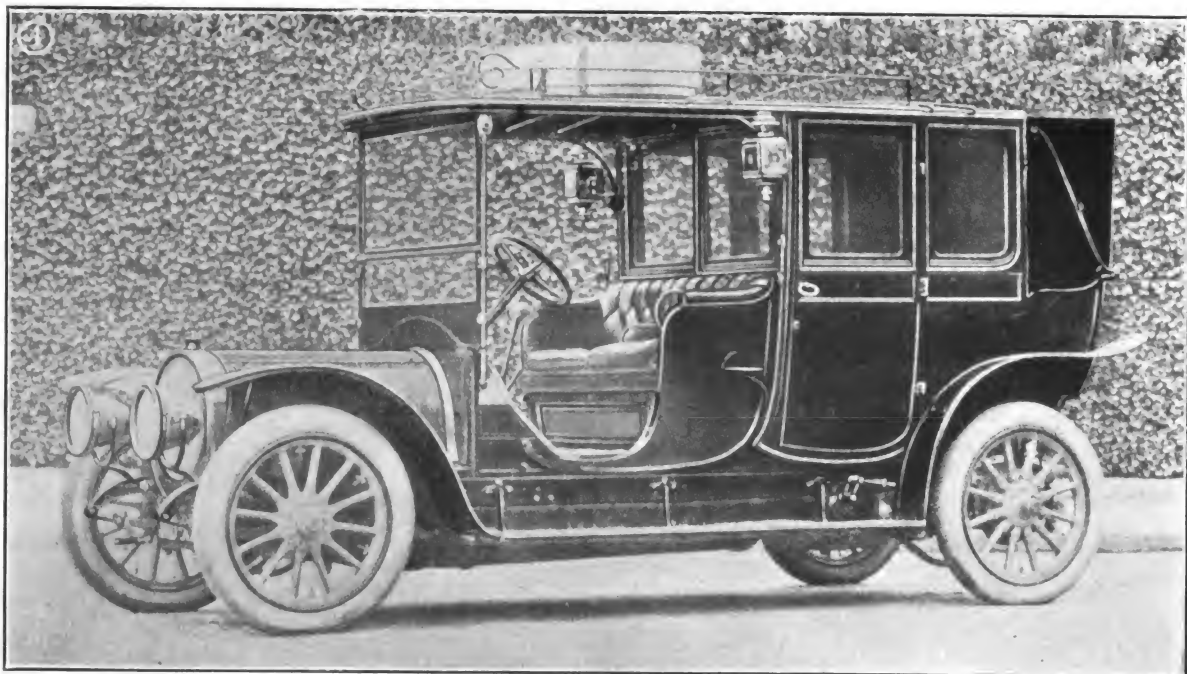




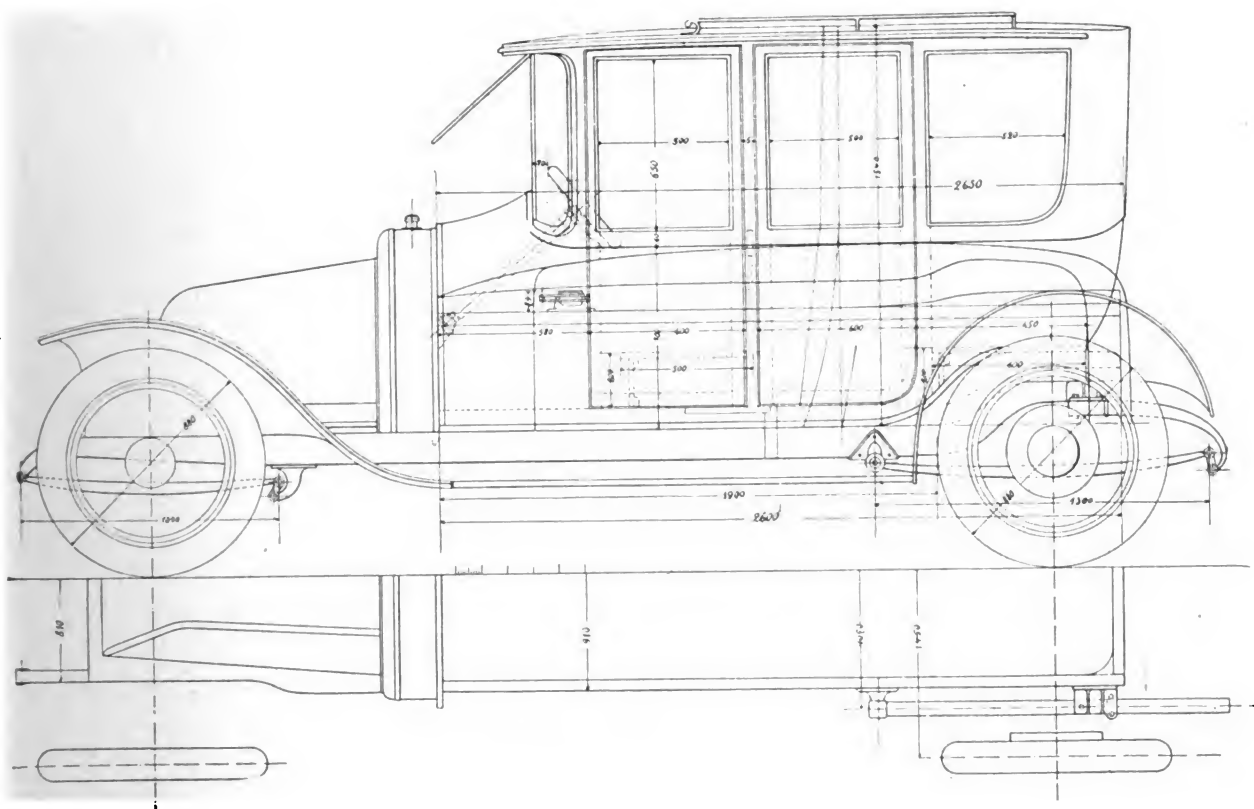
SLIDING DOOR STORM BUGGY  
Example from factory of  
Emerson Carriage Company, Rockford, Ill.



**INSIDE DRIVE LANDAULET-LIMOUSINE**  
Belvallette (France) Model



**RECENT MODEL FRENCH LIMOUSINE**



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# Wood-working Shop.

## HOW TO MAKE UP A LIMOUSINE ROOF, HAVING ARCH OVER DOORWAY

Figs. 1, 2, 3, 4 and 5 illustrate an arched roof such as the Pierce limousines and landaulets show on their 1912 models. The popularity of any design put out by this company is sure to influence the individual orders placed for bodies with body builders doing a small retail business. And as it is not pos-

sible to duplicate the methods of construction used by large manufacturers on a single order, some method must be devised to accomplish the same results as far as appearance and workmanship go, and yet not be too elaborate to swamp the job.

Figs. 1 and 2 show the side elevation and plan of the top section of a limousine body, illustrating the arched doorway. Fig. 1 is the side view and Fig. 2 shows the whole of the left

FIG. 1

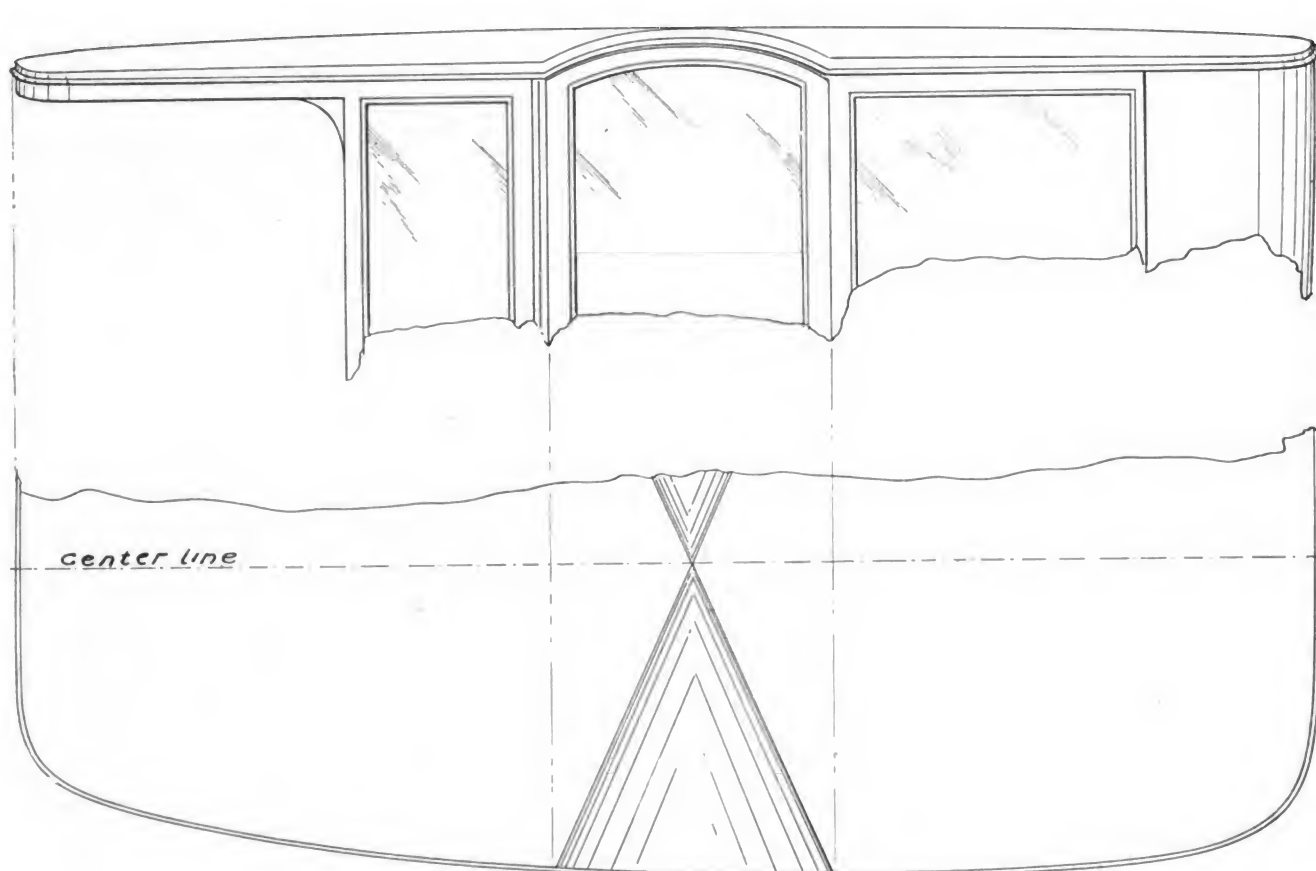


FIG. 2

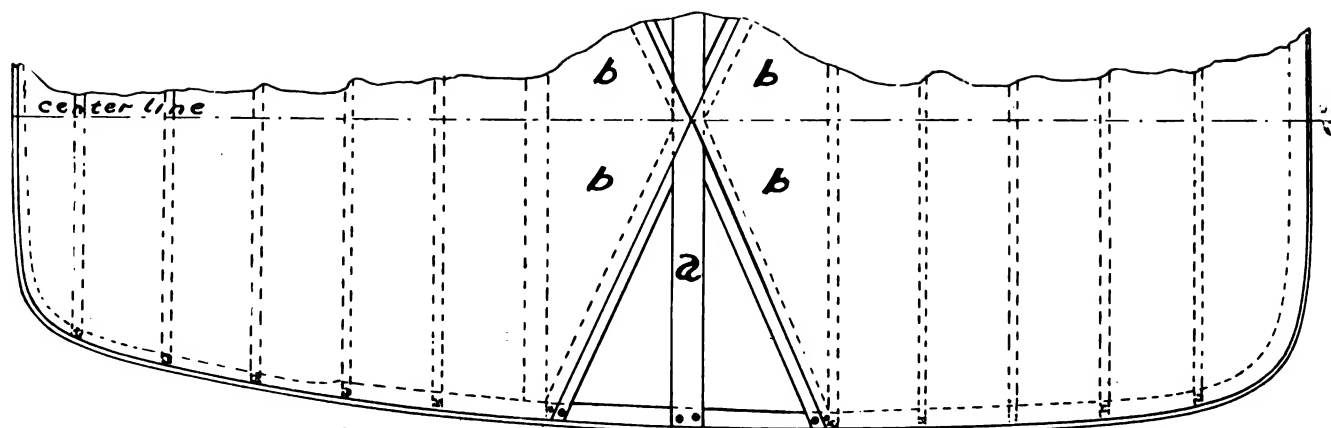
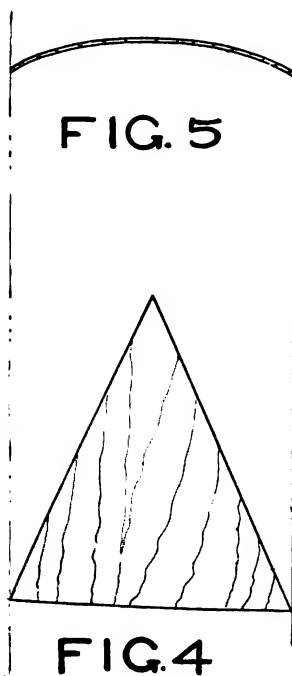


FIG. 3

side and part of the right side of the roof and looking down from the top; the shaded part is the arch.

It will be noted that the height of the arch above the side top rail is governed by the height of the roof sweep in the



center of the job and a straight edge laid across the roof, in the center of the doorway would touch all the way across. Fig. 3 is the same view as Fig. 2 except that the panel covering the arch is removed and the bows and framing show exposed. Figs. 4 and 5 are two views of the panel that is used to cover the arch; this panel is ordinary  $\frac{3}{8}$ -inch thick whitewood panel and bent to the shape of the arch as indicated by Fig. 5.

The framing as shown on Fig. 3 consists of a center bow that is a straight piece of stock 3 inches wide by  $1\frac{1}{8}$  or  $1\frac{1}{4}$  inch thick and framed to the side top rail by a good strong lap and well screwed; this bow is marked A, and the side pieces marked B are  $1\frac{3}{4}$  inch wide by the same thickness as A and are made the same sweep as the other bows. They are lapped to the top rail at the ends and in the center are fastened to the bow A by screws from the side. These

bows marked B are dressed with a slight upward tilt toward the inner side to accommodate the curve of the panel, Figs. 4 and 5.

After the bows are all placed and fastened, an ordinary three ply roof is cut as indicated in Fig. 3 and fastened in place and glued, the arched panel, Figs. 4 and 5, is bent to the sweep and the joints nicely fitted, and is then glued in place and then the whole roof canvased in the ordinary manner.

This is a practical and safe way to build up a roof of this design, and moreover, is a method that is within the reach of any shop capable of building the regulation type of body.

#### METHOD OF FRAMING THE CORNER PIECE ON FRONT PILLAR

Fig. 1 shows the front section of a limousine, in which the roof that extends over the driver is finished at the point of contact with the front pillar by a rounded corner; this rounded effect, simple as it may appear to the casual observer, is nevertheless quite a difficult and troublesome matter to the body maker, because it requires a considerable waste of stock and

the same must be done with the skirt of the top rail, or if pieces are glued on to the pillar to form the framing, and the joints covered with the molding, which in this case must be nailed on the pillar, then we have a long joint where the pillar molding butts against the skirt of the top rail, and also we have short end grain that in time will break off.

Looking again at Fig. 1 it will be noticed that the pillar line b and the top rail skirt line c are drawn straight through and form a corner in the same manner as if no rounded effect was used to make these lines meet the circular one. The reason of this is that the bracket a is a separate piece and is offset in  $\frac{1}{8}$  inch and the sharp edges of b and c are rounded down to it and when the job is painted it has practically the same effect as a plain surface. Also the joint being offset it will never show, if later on the parts work a little and open up. The size of the piece a is clearly indicated in Fig. 3 and the straight lines carried through from Fig. 1 show the relation.

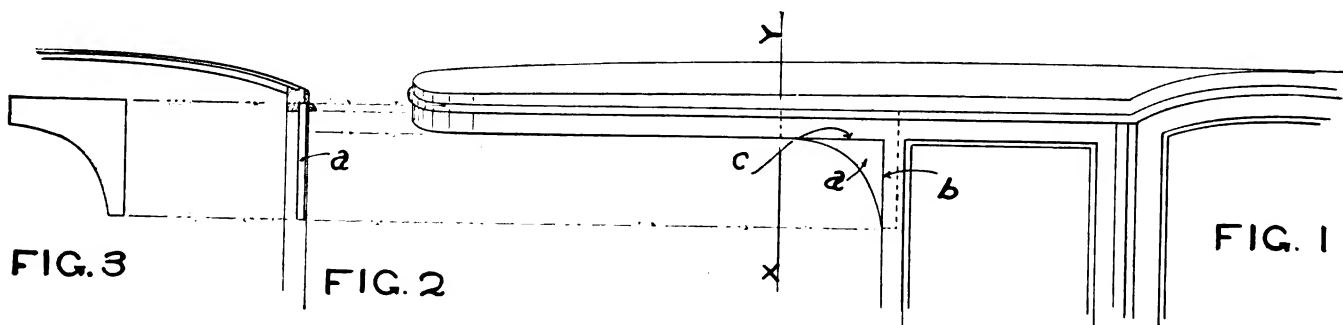
Fig. 2 is a cross section on the line X Y and a on this figure is shown let into the pillar and into the top rail, and the distance that it is offset in is exaggerated so as to show up clearly. The molding on the pillar and the top rail skirt are set outside and cover the joints and are cut into the thickness that the bracket piece extends into them.

This form of framing is the most economical and treacherous joints are eliminated, while the finished effect is the same as if the whole surface was level.

#### GLUE: ITS PURCHASE AND USE FOR BEST RESULTS

Alexander T. Deinzer, in the Wood-Worker, says he has tried to tabulate the relative weights of water and glue of the various grades of hide glues manufactured, but the more he has gone into the matter, the more he has decided that it is almost impossible to do this with any degree of accuracy, for the reason that every manufacturer does not use the same system in cooking his glues. Two pounds of water may be put to one pound of glue in soaking, and, when cooked, it may remain at a high temperature for several hours before being used, and in that case there is a heavy evaporation, so that a low grade of glue would work, according to certain ideas, at 2 to 1. The temperature might be 120 deg. F., or it might be 175 or 190 deg., which, of course, would make a great difference with the body of the glue.

The glue user should get all the value he possibly can from the glue he uses. He should not add too much water, yet enough to make the glue work with perfect safety and be at the same time as economical as possible. The amount of water added per pound of glue varies from  $1\frac{1}{4}$  to 4 lbs., depending upon the grade and kind of glue used. Of course, it must be stated that only the highest grades of hide glue will take from  $2\frac{3}{4}$  to 4 parts of water per part of glue. Many manufacturers



necessitates joints that later on are bound to show up. One way to accomplish this method of finishing economically is illustrated in Figs. 1, 2 and 3.

Fig. 1 at a is the corner referred to, and it can be easily seen that to get this effect in the ordinary manner of construction, it will be necessary to have the pillar sawed from wide stock in order to form the corner to the center of the round, and

are using the proportions of 4 parts of water to 1 part of Aex glue. No more than from  $3\frac{1}{2}$  to  $3\frac{3}{4}$  parts of water should be used for this grade. In laboratory work the water absorption is determined from the viscosity and jelly strength of the glue.

A test much used for determining water absorption is to place, say, 10 grams of the glue in sheet form, in a weighed 400-c.c. beaker, and upon the glue pour 200-c.c. water, which



should be at 15 deg. C. This should then stand in a refrigerator where the temperature is kept from 14 to 18 deg. C., for a period of, say, twenty-four hours. The water is then poured off and the glue weighed. The increase in weight will give the water absorption. This determination must be made on glues at a temperature of below 20 deg. C.

This test cannot be relied upon when it comes to using glues for joint work. If the reader cares to experiment, he will find that many glues will absorb considerably more than six times their weight of water (this applies to high-grade glues), yet, as stated, only from 3 to 3½ parts of water should be added to the very highest grade 3Aex glue. The determinations made in laboratory of water absorption are based upon results obtained from viscosity and jelly strength, and this is the only safe way to determine how much water to add to the glue.

For the benefit of glue users who know what grades they are buying we tabulate the proportions of water and glue used for joint work and veneering:

Grade.	Parts Water to 1 lb. of Glue.	Grade.	Parts Water to 1 lb. of Glue.
1½	1½	1 Ex.....	2½
1¾	1¾	Aex .....	2¾
1¼	2	2 Aex.....	3
1 X.....	2	3 Aex.....	3½
No. 1.....	2¼		

The writer would like very much to give further information regarding water absorption. However, this would be impossible in an article of this kind.

Mr. Friman Kahrs is entitled to much credit for working out a system whereby the real joint strength in animal glue may be determined. As the reader well appreciates, the main factor influencing the joint test is the tensile strength of the glue. In stating strength of glue, I mean the weight required to tear apart a piece of solid glue 1 inch square, then pulling in similar way to the pulling of the joint. In Mr. Kahr's experiments he has found a variation in joints ranging from 800 to 14,000 pounds per square inch.

Many of the large manufacturers make test joints by gluing together boards along straight lines, and splitting the joints with either a chisel or a wedge. When the glue holds the pieces together so firmly that the glue joint does not give way, but the wood itself is split or ruptured, the glue is considered very satisfactory and passes inspection. Other manufacturers use what is known as the steel test, the test being carried out on two pieces of steel 1 inch square. They do this for the reason that they believe that metal is more constant than wood, on account of the pores which wood has. Unless joint tests are correctly made, it is useless to waste the time in making them.

If any glue user will take 1¾ glue, prepare it properly, and glue up pieces as above stated, he will find that this grade of glue gives an apparently good joint, and that when using a chisel or wedge to sever the pieces the wood will split and the joint will not give way. When using 3Aex glue we will obtain the same results. Grade 1¾ glue will cost from 10½ to 12 cents and 3Aex from 17 to 20 cents per pound. The average glue user will say 1¾ seems to hold up as well as 3Aex, and, as the price is way below that of the higher grade, I will purchase 1¾ glue in the future.

When gluing up test joints in this loose way, what do you learn from these experiments? Absolutely nothing. Take an ordinary bone product and glue up joints, and you will be surprised at results.

In order to make joints so that the strength of the glue will be indicated with reasonable accuracy, a number of important factors must be considered. Among these are the proportions of glue and water, the amount of glue in the joint, pressure when glue is applied, temperature of cauls, glue, glued article and of the test piece when pulled apart, density of test piece, and pressure in clamps. Proper joining, smoothness, preparation of joints, true fit, etc., must also be considered. Where a machine is not employed for testing joints, the tensile strength may be determined by hanging the test blocks (pieces

of wood being perforated through the ends opposite the joint) to a beam by means of a rope, and the other end to a rod on which weights can be hung.

As every wood worker knows, foam is undesirable in glue. Foam will increase the viscosity of glue, and is present in over-limed or poorly-washed glue stock for the reason that such stock will retain mucin, or soaps. Fernbach's test for foam is commonly used. This is executed as follows:

After the hot solution has been employed for odor, grease and viscosity, it is transferred to a graduated glass vessel. An egg beater is rotated in the glue solution for half a minute, and the quality as well as the quantity of foam noted. If this is permanent, it is moderately foamy. If it goes above this line the glue should be rejected. Care must be exercised to not agitate the glue solution too rapidly nor too long, otherwise the glue solution will emulsify. About two revolutions of the egg beater per second will suffice for this test. As the reader will appreciate, foam is estimated only on a comparative basis.

The method of determination of gelatinous constituents depends upon the fact that the constituents are precipitated by addition of alcohol to the aqueous solution. Soak 15 grams of the sample in 60-c.c. of water for twenty-four hours. This is then dissolved as usual. Alcohol may now be added gradually, with constant stirring, till the volume of the liquor is made up to 250-c.c. The mixture must now settle, and should be filtered, the residue being washed well with a mixture of 3 parts alcohol to 1 of water. The filtrate is now measured and a portion evaporated to dryness in water bath in a tarred vessel. The residue from the evaporation consists of the non-gelatinous constituents of the glue.

An examination of the ash of a glue serves to reveal impurities. For example, a trace of the metal chromium will slowly and surely rot and weaken the glue joint. Many manufacturers to this day add salts to increase the adhesiveness of their glues. Good joint glue should be pure sinew stock, and not loaded with chemicals to give fictitious value. It should be extremely clear and refined to the utmost. Foreign elements in glue will hinder the glue fiber in entering the fibers of the wood and binding them together tightly.

The viscosity of glue solutions is their rate of afflux from a vessel of known capacity, as compared with that of the same volume of water. Hence, viscosity gives us a useful physical test for glue solutions, oils, etc., for it is based on their relative body, a property that may be regarded as the converse of fluidity.

The so-called Engler viscosimeter may be used with perfect satisfaction, and this can be purchased from any chemical supply house. The vessel of this viscosimeter, containing the glue solution under examination, consists of a smooth box of brass, provided with a lid. Connected with the bottom is a 20-millimeter tube which is almost exactly 3 millimeters in width. It is usually made of brass, and is open at the top. It may be opened and closed by a plug. Filled to the mark, the apparatus should hold 240-c.c. The box is surrounded by a jacket, made of brass, and is open at the top. This serves to hold the glue solution at its proper temperature. Thermometers record the temperature of the glue to be tested and the liquid in the jacket. The apparatus rests on a tripod.

The viscosity as well as other tests for glues are incomplete unless the odor, alkalinity, acidity, grease, moisture, jelly strength, foam, examination of ash, joint strength, spread, etc., are taken into consideration.

Another reason why the viscosity test cannot be depended upon is that much glue is clarified by means of alum, which would, of course, give the solution a heavy body. Again, where the viscosity test only is made, the glue manufacturer has a chance to add glue with the deliberate intent of imparting to the glue solution a fictitious "body." Many manufacturers would not resort to such trickery, yet it behooves the glue user to be careful at all times.

One of the greatest faults with poor joints rests with over-

heated wood. I already stated that glue applied too hot is everything but a benefit to the joint, as all the water of the solution will be absorbed by the wood, leaving a thin, inadhesive coating of glue at the surface of the joint, which can therefore hold only a limited time. This likewise holds true when the stock is too hot, and in addition the stock will burn the glue and destroy adhesiveness. Heating the stock dates back to the time when all stock was air dried, and the custom is in vogue to this day. The stock when heated should not be over 100 deg. F.

I have seen joints glued with stock so hot that it was impossible for the workman to touch the face sides. In many factories no hot boxes are used, and the stock is piled against the coils of radiators for almost an indefinite time. It is as important to gauge the heat in the hot box with a thermometer as it is to take into account the temperature and humidity in a modern drykiln. I see absolutely no reason why stock thoroughly kiln-dried and properly handled should be heated before glued. The hotter the stock and glue, the greater the penetration, hence with heated stock we also have a waste of glue.

Do not depend upon the glue salesman for all your information. Learn to classify and grade glues yourself, so that you will be able to recognize the various grades. Very often one can get most excellent bargains on very high-grade glues. When you can save from two to three cents per pound, and a great quantity of glue is used, this saving means quite an item. When you find a glue which satisfies you, and the price is right, buy the whole boiling. Many manufacturers are glad to ship as you want it. Test your glue from time to time and see that the manufacturer holds up the quality.

### WHEEL MATERIAL

The first item that enters into the construction of a wheel is the material. Hickory, either second growth or that part taken from the butt of the small forest tree, is best adaptable to the finer uses of wheel manufacturers. Government tests have been made on the different varieties of hickory, of which there are some ten or more, and these experiments have shown that the manufacturers were working along the right lines when they used the so-called block hickory in all cases possible. Hickory in commercial quantities was once found in every state east, and in several states west of the Mississippi River. It has been the opinion of experienced timber buyers that the best hickory is found in and north of the Ohio River valley. Observations indicate a good supply of suitable hickory for the manufacturers of wheels when the present generation is gone, as we are now taking hickory from lands that we cut over for hickory twenty years ago, the last cut being of the best quality.

Hickory does not and never did form pure forest. The trees are scattered here and there. When an average stand of from 200 to 400 feet of hickory is found upon tracts it is fully up to the lumberman's expectation. Hickory neither grows like any other commercial timber, nor can it be cut or marketed in the same manner. It is a peculiar wood in several respects—growth, properties, uses and marketing. Its combination of strength, toughness and elasticity has made it the world's foremost wood in vehicle manufacture. It offers supreme resistance to strains, twists and shocks. The severe thrust, twist and compression strains which automobile wheels must sustain demand spokes of absolutely the best material obtainable and for this work the manufacturer depends upon hickory.

Hickory growing in isolated parts of forest tracts, little clumps far apart, has made the cutting and marketing of it one of doubtful profit to the large mill owner of today. The men who are cutting hickory are usually found to be those with small portable mills, moving their plant to the wood, in preference to hauling the wood to the mill. The best material for spoke billets, rims, etc., is obtained from either second growth stock or from near the base of small forest trees. The sawing is done by mill men who move from place to place. The

sawyer is paid by the 1,000 feet, and in his effort to turn out the greatest possible quantity of lumber, carelessly cuts a larger percentage of low-grade stock than is necessary.

Hickory billets and strips for felloes are cut by the mill man and shipped to the manufacturer in that condition. The wood is in many instances green, and necessitates scientific procedure in drying in order to obtain the best results from the material. Steam heating is said to be the most satisfactory method of drying the wood; starting in with a low temperature after the kiln is first built, gradually increasing to and holding at the highest point for some time, and then gradually decreasing until the stock is ready to remove. The spoke billets are then taken directly to the turning machine, where they are turned into what is called "dry-club" state—that is, the heads are not faced or mitered, but the barrels are turned to their finished shape. They are then given another course of treatment in the dry kiln, and are then ready for the finishing operation, which consists of mitering, facing, equalizing and sanding. The felloe strips are taken from stock as they come direct from the mill, are steamed with both exhaust and live steam, bent up to the correct form and then set to remain in dry kilns for twenty to thirty days, as the case requires. They are then ready for the planing, boring, rounding and sanding, after which they are ready for the assembly department.

### THE ASH TREE

Ash has a distinct tendency to forked growth, and grows best in a loamy or clayey soil where the situation is not dry. It reaches maturity at the age of about seventy years. It is interesting to note that some thirty ash trees planted thickly only attained in seventy-five years an average diameter of 20 inches, while an isolated tree fifty-five years old measured 36 inches in diameter; while another, thirty-two years old, had separated into two forks of 19 and 21 inches diameter respectively. From similar observations made, it has been found that this tree grows from 20 to 25 per cent. larger on moist than on dry soils.

The heart of a tree is not always in the center, because it has a tendency to develop more on the southern side—that is, the side which receives the most light and heat. This characteristic is, of course, more strongly defined with hedge-grown than with forest trees. The number of rings is the same both sides of the tree, but they are wider apart on the southern side.

Timber shrinks chiefly transversely owing to the sap evaporating from the fibres, a process which is more marked the nearer the fibres are to the bark. As the fibres become emptied so they fall together, causing the log to open out along the lines of the medullary rays. Remembering that the greater amount of sap is towards the outside, planks when cut from the log will contract under the same law—that is, the portion farthest from the heart will shrink the most. In marking out the door pillars on the plank, it is advisable to arrange the pillar so that the outside is towards the heart of the plank, and therefore any tendency to bend will serve to maintain the spring of the doors.

### AIR AND KILN DRYING

All "air-seasoned" wood has its advocates, but the general practice of mill work makes it imperative that a dry-kiln of some kind be used, even if the lumber has been on sticks for years.

Suppose you have a pile of lumber which you know to be thoroughly air-dried, or else some stock that was dried perfectly in the kiln last year and has been under cover ever since; does it not seem reasonable to suppose that this lumber should be in an ideal condition to work up?

To test the matter we will take a board or plank as the case may be, about eight or ten inches wide, and resaw it into two boards of equal thickness. If the two parts remain flat, the

wood is in proper condition to go into the work if it is known to be dry.

But if the boards turn out, making the resawed side the round side, then the middle of the plank is not so dry as the outside; but if the boards cup next to the resaw, then the plank is drier on the inside. This test is thus in reality one of distribution of moisture rather than a test for humidity alone.

Now, if the boards will stay flat after resawing, it may be safe to go ahead with the work. For if they are wetter than the atmosphere the freshly sawn side will shrink much more rapidly than the other and so cup the pieces on this side. So after all, we find that this simple test will give us the two salient points of information for which we are looking.

However, suppose the resawn boards cup in and pinch the saw at the edges, showing that there is an excess of moisture in the outside parts of the plank, what can we do but put the material in the kiln until the surplus is evaporated? In case we want to resaw this stock, this would be the proper thing to do, but if it is lumber but recently taken from the kiln, and does not need to be split, the work may go on, but slowly enough to allow the wood to temper in the natural atmosphere of the shop.

One of the remarkable things about handling the various woods is the way some of them act with glue. For instance, all of the oak woods require a very thorough drying before glue joints may be guaranteed as permanent. The least circulation of sap or sappy moisture will cause the glue to crystallize and look like fine frost, and the joints will open up.

The common test for dryness in oak lumber is in the odor, and is rather of a negative quality. It consists of the absence of the sour, rank smell of the green or wet lumber. If the workman does not know the difference in the smell of dry oak and wet oak he can learn it very quickly by smelling of the two varieties.

### GLUE HEATING BY ELECTRICITY

There is no other heating agent so entirely satisfactory as electricity. It eliminates fire risk and there is no danger from overheating.

The great trouble in the past with electricity has been its expense.

Now it is possible to buy electric current anywhere from 1 to 4 cents per k.w. hour, and with these prices for electricity, it is today cheaper to use electricity as the heating agent for the preparation and handling of glue, than to use either steam or gas, in most cases.

Since the advent of the "fireless cooker" a change has been brought about in the design and construction of glue heaters, glue pots, etc.

All of the current generated for melting the glue in such a heater is retained in the heater and in the glue. There is practically no radiation and there is no surplus of heat or current used. With this kind of an outfit, the glue can be melted and kept hot all day long with one hour's current.

### MOLINE WAGON COMPANY TO BE CALLED JOHN DEERE WAGON COMPANY

The name of the Moline (Ill.) Wagon Company is to be changed to the John Deere Wagon Company. The Moline Wagon Company is one of the oldest manufacturing institutions in the wagon business, and ever since its establishment the relationship between it and Deere & Co. has been very intimate. In fact, the two factories were so closely allied that the Deere organization has always sold practically the entire output of the Moline Wagon Company.

Some two years ago the Moline Wagon Company factories were purchased outright by Deere & Co., and since that time a line of wagons bearing the John Deere trade mark has been manufactured. The recent development of a full line of John

Deere wagons in a factory of another name caused some confusion in the trade and the logical thing was to have the name of the factory harmonize with the line of goods manufactured.

The John Deere Wagon Company owns an enormous acreage of wagon timber. Its hard wood forest holdings are so extensive that in the estimation of experts the young timber coming on will always more than replace the cuttings. The factory owns and operates its own saw mills in the hard wood timber belt, where wood stock is sawed to shape and air seasoned several years before being stored at the factory.

The officers and directors of the new corporation are as follows: Wm. Butterworth, president; W. L. Velie, vice-president; B. F. Peek, treasurer; E. E. Parsonage, secretary and manager, G. W. Mixter, S. H. Velie, G. N. Peek, C. D. Velie and W. H. Johnson.

### PEORIA IMPLEMENT SHOW BUILDINGS TO BE ENORMOUS

Complete plans of the National Implement and Vehicle show grounds have been completed and turned over to Secretary Evans. These plans will soon be ready for distribution broadcast over the country. They show a far different arrangement of grounds and buildings from the present arrangement and are featured by the appearance of an enormous exposition building, 100 feet wide by 500 feet long, near the California avenue entrance.

George F. Carson has been chosen as secretary of exhibits, and Chas. A. Nathan has secured the midway concession. He will not, however, have charge of the Peoria Products Exposition building, which, like last year, will be a feature of the big implement show. The committee which will oversee all concessions is headed by R. D. McDougal, that of exhibits is in charge of C. A. Pattison, under whose direction Secretary Carson will work.

Four days will be devoted to aerial features which will include monoplane and biplane flights, a parachute leap from a biplane, altitude flights by Beachy, and exhibitions by women aviators. Passengers will be carried on some of these days and a mail delivery stunt will be put on.

### COD LIVER OIL

In this country nearly everybody is familiar with two grades of the brown oil, the Newfoundland cod liver oil and the domestic cod liver oil, or so-called Coast cod oil. The Newfoundland cod liver oil represents the oil made exclusively from the livers of the cod fish, whereas in our domestic cod oil or Coast cod, the livers of any fish caught in the nets of the trawlers are used. Besides for the oiling of leather, cod liver oil is used for making oil tanned leather or chamois leather and the production of degrass or sod oil. Sheep skins or goat skins are thoroughly saturated with the oil, are then exposed to the air and later piled and allowed to heat. The process is essentially an oxidation one, the oxidation of the oil being completed when the skins have acquired the yellow color of chamois leather. About half of the oil combines with the fiber and the other half remains in an uncombined state. This uncombined oil is then removed by steeping the skins in warm water and pressing, and it constitutes the product known as degrass.

### SPOKE FACTORY FOR NASHVILLE

The Bilbrey-Welch Spoke Company, with a capital of \$50,000, is the style of a new manufacturing concern that is taking steps to locate in Nashville. J. C. Bilbrey, who for a number of years has been identified with the spoke business, will be at the head of the company, and associated with him will be Mr. Welch, who is operating a plant at Monterey. The promoters of the new company state that steps will be taken to start the factory as soon as a suitable location can be secured.

# Paint Shop.

## WHAT IS "PAINT"?

The dictionaries all seem to agree on one meaning for paint, and that is: "Coloring matter for the face; rouge, etc."

Before plunging into the details of the inquiry, attention is directed to the distinction between a definition and a specification, because you will often see these words being used to convey the same meaning. A definition is a precise statement of the essential nature of a thing, while a specification is a detailed description of the workmanship or materials, etc. It is a definition to state that a triangle is a plane figure bounded by three sides, but if we qualify it by the provision that each side shall be one inch long, it forthwith becomes a specification.

It is obvious, then, that a definition is of wider range than a specification and should embrace all general principles free from limitation.

Let us look at a few of the most tenable definitions that have been given. While recognizing the respects in which they are defective we shall see what requirements a more satisfactory one must fulfill.

No better start can be made than by taking as our authority Dr. Samuel Johnson, but his dictionary, 1827 edition, is very hazy as far as we are concerned, paint being described as

1. Colors representative of anything.
2. Color laid on the face.

Ogilvie's Imperial Dictionary, 1883, deems paint to be "a coloring substance; a substance used in painting either simple or compound, as a white paint or red paint." This is particularly unintelligent.

Chambers' Dictionary, 1898, says paint is "a coloring substance; anything fixed with caoutchouc to harden it."

From Cassell's Encyclopædic Dictionary 1909: "Paint. Color used by the artist and so prepared as to be applied with a brush." Here we notice a slight improvement, although rather flattering to the "brush hand" if he is to be classified as an artist.

The next example is a quite recent production from a celebrated center of learning, i. e., The Concise Oxford Dictionary of current English by Fowler. Paint: "Solid coloring matter dissolved in a liquid vehicle so as to impart color to a surface."

Murray's Dictionary, 1909, follows much the same lines in defining paint as a substance consisting of "a solid coloring matter dissolved in a liquid vehicle as water or oil, used to impart a color by being spread over the surface." Someone may remark that if instead of "dissolved" the compiler had stated the solid matter was "suspended" in the liquid vehicle, the definition would be more satisfactory. That is true if the solid matter happened to be a recognized pigment and the vehicle a suitable one; but what if the solid matter were sand and the vehicle mineral oil? If we consider the definition still more closely, however, we find that even in the amended form it would permit of such a mixture as quicklime in a solution of caustic soda being passed off as paint, whereas we all know it to be a most active paint destroyer. This, then, is one of the instances where too much has been included.

Webster's International Dictionary, 1909, read as follows: "Paint—A preparation of a pigment or coloring substance made by mixing with some suitable vehicle as oil, water, or varnish, and forming, when applied to a surface, an adhesive coating." This, though better than those preceding, is not free from similar objections. It does not say whether the paint is meant to dry, and might, in consequence, apply with equal truth to some form of fly catcher.

Goodchild and Tweeny, in their Technological and Scientific Dictionary give the following: "Paint—A liquid or semi-liquid consisting of one or more pigments reduced to a fine powder and mixed with linseed oil and turpentine or other vehicle and intended to be used for the preservation or beautifying of the surface to which it is applied." Here, at last, we begin to make real progress, but the writers have introduced limitations by specifying linseed oil and turpentine, which leads to the assumption that they only had oil paint in view. Even, however, should the words "other vehicle" be deemed to cover every other description of paint, for reasons already given, the definition is still defective.

Sabin, in his book, takes pains to state that pigment does not dissolve in oil, but only mixes with it, converting it into a muddy opaque colored liquid—which is called paint, but this reminds us very much of the White Knight in "Alice in Wonderland," and with him we agree that this is only what it is called not what it really is.

There is yet one extract that must be quoted, and that is from the book issued by the Royal Institute of British Architects, entitled "Notes on the Properties and Ingredients of Commercial Paints." The committee responsible for the drafting of this work, in their comments on paint, fall into the common error of describing what one particular kind of paint is made of, and although the medium is referred to in general terms as "the vehicle," yet as it is stated to solidify by oxidation sometimes accelerated by 1 to 2 per cent. of a drier, it must be assumed that an "oil" paint is the only one the committee had in mind.

The point is that it by no means follows a paint must contain oil; even now it does not invariably do so; there are spirit paints, tar paints, celluloid paints, glue paints, cement paints, and many others which need not contain a drop of oil. It might, moreover, conceivably happen that with the advance of science some new vehicle might be produced which would entirely supersede oil, and still leave paint as we at present understand it.

However well the definitions already given may express the conception of paint under some of its aspects, no one of them is more than approximately true. It may, indeed, turn out that to find a formula which will bear every test is impossible. Meanwhile, however, it should be possible to frame more adequate formula than any we have heard. In so doing it must be borne in mind that that which is essential to paint must be common to paint of every description.

The great majority of authorities apply the word paint to what is generally known to us as "dry color," as well as to the "liquid" article; our first duty is to differentiate between the two. Now although "dry color" probably holds a prior claim to the title, yet this is not what is generally understood as paint now; moreover, while the word "pigment" does excellent service in describing dry color, there is no such alternative title for what we call paint.

Whatever then may have been the original meaning, it is obviously extremely inconvenient for one term to apply to both the part and the whole—to a single ingredient as well as to the finished compound. By such an admission not only would our quest be rendered well nigh impossible, but it is questionable whether any compensating advantages would follow.

There is consequently considerable justification for maintaining the opinion that the application of the word paint to the dry substance should be discountenanced. If mentioned at all in this connection it should be qualified as being an obsolete term having no present day signification.

In searching Murray's Dictionary for something to amplify

their group description of paint as "That with which anything is painted," the inquirer turning to the verb, finds as might be expected, "to cover the surface with paint." He may by this time have remarked the greater prominence given by authorities to the act of application rather than to the material applied consequently he will be led in due course to question as to the object of covering a surface with paint. The purpose of painting a surface is generally agreed to be the achievement of one or both of two distinct ends, i. e.:

- a. To beautify.
- b. To protect.

It is not necessary for us on this occasion to promote an inquiry as to which is the more important aim of the two. What is needful for our purpose is that due recognition shall be given to both functions.

In order that paint may be applied to a surface, it must necessarily be in a form that will allow that process to be conveniently carried out. This fact gives additional weight to the opinion that dry materials should not come within the category of substances classified as paint, which must as a consequence be of a liquid or semi-liquid nature. In so being it is after all only in conformity with the great majority of commodities—even such products as glass or metal itself—which at some period or other in course of adaptation or manufacture are reduced to the liquid or plastic state.

But everything is not yet provided for, as anyone will agree who has been the victim of a melancholy acquaintance with paint, that from some mischance or other has failed to dry or otherwise solidify. So long as a covering remains in a liquid condition, the article to which it is applied is for that reason alone, useless when liable to contact. Even in isolated places, where the question of contact might not arise, paint, that does not dry, is an unserviceable mixture which, attracting to itself foreign matter organic and inorganic, quickly brings about a total nullification of the objects aimed at; on the other hand the feature of beauty is rapidly lost, while on the other, the wet material small at the outset, in protective properties, may speedily become an active corrosive agent. Paint must therefore be a liquid substance with what is commonly known as "drying properties"; it must furthermore adhere to the surface to which it is applied; but if our definition were based on those qualifications alone, linseed oil might be classed as paint as also might varnish.

While narrowing the field of our inquiry we have not yet guarded against all contingencies; there still remains the hypothetical substance that could be a mixture of solid and vehicle, be in a liquid state, possess the requisite drying properties and yet be of a highly corrosive nature. In our desire to exclude such a mixture we must be careful not to state that each constituent shall be chemically inactive because by that ruling such an ingredient as linseed oil would be inadmissible. Again any reference to acidity, alkalinity, or chemical neutrality would introduce a host of complications, and probably frustrate our whole endeavor because there is no justification for closing the door to active chemical agents which might be introduced for the purposes of preserving, resisting fire, antifouling, etc., etc. Our definition then must not go further than to intimate that paint must be free from properties that would tend to destroy the surface to which it is applied. In going thus far we must take the greatest care we do not exceed our duties and find ourselves discriminating between good and bad paint.

## TURPENTINE AND VARNISHES

Turpentine, next to linseed oil, is the most valuable paint and varnish vehicle, and also the one that lends itself the most to adulteration. Owing to the very high price and to the scarcity of this article, a number of turpentine substitutes have of latter years been put on the market. Many of them are much inferior to the genuine American turps, thus causing substitutes as a whole to be looked upon as adulterants. There

are several, however, on the market which are almost, if not quite, equal to the American article, and are now being exclusively used in the manufacture of paints and varnishes. Like white lead, the user has grown so accustomed to the use of American turps that he is prejudiced against anything else. The time will come and come soon, I firmly believe, when the good substitute will be almost entirely used.

American turps is crystal clear and water white, and weighs about 8 lbs. 10 ozs. to the gallon; specific gravity at 60 deg. F. from .865 to .875; its boiling point is about 106 deg. C., and it is completely distilled at 170 deg. C. Its usual adulterants are rosin oil and products of petroleum. If a small quantity of turpentine be evaporated from a cup, there should be practically no precipitate left; if rosin be present there will remain a sticky deposit, giving off when ignited the odor of rosin. If a few drops are placed on white writing paper, if pure, all traces will disappear within half an hour. Fill two deep glass vessels, one with pure, the other with the suspected turps, hold over sheet of black paper and look directly down into them. The presence of petroleum oil is indicated by the bluish yellow bloom it imparts. That turpentine can be easily tested is rather a broad statement, as several statements are now made which compare almost exactly with American turps, but even these can always be detected by the smell by anyone who is used to handling turpentine to any extent.

The analysis of oil varnishes is one of great difficulty because it is quite impossible to separate all the ingredients from one another so as to ascertain either their amount or their character; all that can be done, and even that but approximately, is to separate out of the spirit employed in thinning down the varnish. The amalgamation, chemical change, and combination with the oil to make varnish, is such that it completely changes the nature of the raw materials used, and it is hardly to be wondered at that the present condition of analytical chemistry has not given us a means of separating the oils and gums from each other. If it is desired to separate out and estimate the spirit used in the preparation of the varnish, this can be done by distillation in the ordinary way.

It would not help the practical user if he could analyze his varnish, as it is quite immaterial to him what it contains; but he does ask himself: "Will it do what I want and expect it to do?"

Varnishes, when used for the purpose for which they are intended, exhibit many peculiarities and eccentricities which are very puzzling and inexplicable to both manufacturers and the users. Many things happen in the using of varnishes which can never be solved for want of proper observation of the conditions of using and sometimes to the want of care. I have known two samples of varnish, taken from the same can, but used on different work, to turn out differently. The one sample has been everything that can be desired, while the other sample has turned out badly. When asked to give a reason, I have had to give it up, but most probably the preparation of the ground work had a lot to do with the result.

It sometimes happens that a painter, by leaving the bung out of the can, will leave his varnishes exposed to the air for some time. He then finds that the varnish has thickened too much to use. He will often add turpentine to thin it down again, and is very surprised when he uses the varnish to find that it dries patchy, that is, the varnish dries in dead and glossy patches. As often as not he blames the varnish. It should be well known that turpentine will not properly amalgamate with cold varnish, even if well shaken up; when left it will be found that some of the turps has risen to the top. To thin the varnish properly it requires to be heated, and even then it is not safe to use the varnish so treated on good work. The same will apply when terebine or other liquid dryers is added to varnish, and if a painter does do this, he should do so at his own risk, and must not blame the manufacturer if the work does not turn out satisfactory.

Varnishes made from cheap, low-grade gums and rosin are rather liable to perish. The same thing happens when too



much driers is used in making the varnish. Exposure to gases, especially the vapor of ammonia, or to heat before the varnish is dry, is liable to induce the varnish to perish.

Whenever any such faults occur in varnish work the varnisher should make particular inquiry into all the conditions surrounding the work before proceeding to form an opinion as to the exact cause, and at once throwing the blame on the varnish. First, he should have regard to climatic conditions; then to the place and circumstances surrounding the work, whether subject to draughts, too much heat, vapor, etc.; to the condition of the work itself; and the care with which the varnish has been applied.

In using varnish several points should be carefully seen to. First and foremost the work must be thoroughly clean and dry, free from grease, pumice dust and dirt. Secondly, the brush must be quite clean and dry. A brush that has been kept in paraffin must not be used, as paraffin is greasy and will spoil the work. Thirdly, the atmospheric influences must be the best possible. Fourthly, the varnish must not be too thick, as this is as bad as using it too thin; both will cause it to run, the former will cause it to hang in festoons.

### THE EFFECTS OF TINTS ON PAINT DURABILITY

It is generally admitted that tinted paints are far more durable than white paints. The claim is made that the increased durability of tinted paints is due entirely to an increase of oil brought to the white paint by the coloring pigments, all of which have rather high oil-carrying properties. As a matter of fact the amount of oil carried into a white paint by one or two per cent. of tinting color is too small for consideration, and is quite insufficient to give the result claimed. White leads made by various processes take up varying amounts of oil, 100 pounds of some paste leads requiring only  $3\frac{1}{2}$  gallons of oil, while in other cases leads made by different processes require as high as six gallons of oil to produce paints of a relative consistency. Upon exposure of such leads, there seems to be no material difference in the way they wear. This result would further indicate the fallacy of claiming that the extra durability obtained from tinted paints is due to the slight increase of oil brought to them as a contribution from the coloring matter used. We must attribute the greater durability of tinted paints, therefore, to the nature of the added tinted pigments, and to the differing physical and chemical properties which they bring to the white base.

### WHITE LEAD POISON

An Austrian government official connected with the Industrial Hygiene Department says: "The prohibition of a dangerous article is a mode of dealing with the danger which is childish in its simplicity, and which would lead to an intolerable interference with the machinery of civilization if it were applied to all the substances which are of greater danger than white lead."

A general utility white pigment equal or superior to white lead may some day be discovered. Admirable dark paints have always been made free from lead because the medium is more important than the pigment. Given a good medium, result, a good paint. To a great extent this applies to the white lead question. And if the pigment is of great relative importance, then its physical condition is of still greater moment. Numbers of samples of dry pigment have been used to produce photo-micro lantern slides. Magnified at 370 diameters, the particles can be inspected quite well. Taking barytes in its levigated condition, and compare it with blanc fixe; and yet again comparing blanc fixe with best lithopone, the point needs no further laboring. Lead is a subtle poison, and Professor Forel says this of the chronic form, "when the external symptoms of poisoning of the individual are few or none."

Numerous experienced medical experts agree that lead pigments in paint, etc., are virulent cumulative racial poisons, which may originate defect, abnormality, or disease in a previously healthy stock, injure the nervous system, poison the germplasm in the potential parent, and damage irretrievably the unborn child, and, indeed, actually endangers life. But what do most operative or small master painters know of medical research?

The Medical Superintendent of Claybury Asylum says: Of 133 maniacs, who were then under his care, who had worked in lead, there were 75 painters, 13 decorators, 18 plumbers, 13 gasfitters, 3 grainers, 1 color grinder, 1 file cutter, 1 tea lead roller.

### THE SPREADING POWER OF PAINT

A pound of any paint will go further on a metal surface than on a wood surface, because the latter is porous, and the paint sinks into the substance of the wood, while in the case of the metal it is non-porous, and the paint remains on the surface. Different woods vary in their porosity, and paint will go further on oak than it will on deal or beech.

Observations as to the spreading power of paint of various kinds on various surfaces has been obtained.

The standard is the surface in square feet covered by ten pounds of paint of the usual consistence, and applied evenly with a brush.

#### On Wood

Oil or Paint	First Coat	Second Coat
Raw linseed oil.....	756	872
Boiled linseed oil.....	412	540
Resin oil .....	540	682
Red lead .....	113	252
White lead .....	221	324
Zinc white .....	378	453
Red oxide .....	453	540
Barytes .....	382	436
Chrome yellow .....	252	336
Brunswick green .....	310	396
Lamp black .....	382	522
Ultramarine .....	462	584
Lithopone .....	400	472

#### On Metal

Raw linseed oil.....	1,417
Boiled linseed oil.....	1,296
Resin oil .....	944
White lead .....	648
Zinc white .....	1,134
Red lead .....	477
Red oxide .....	870

The difference in the absorbing power of wood over metal is well exhibited in these figures.

### ABOUT PAINT

Paint is obtainable in two forms, one very old and the other comparatively new. The old form is that of a thick paste, consisting of the solid materials (pigments) ground in linseed oil. The painter mixes these pastes—whites and tinting colors—with more oil and dryers, to produce paint of the proper working consistency, drying speed, etc.

The modern form of paint is made completely by machinery, all the ingredients being incorporated, so as to produce paint of nearly the proper working consistency, with dryers, etc., included. Such paint is sold in sealed cans, which protect the material from the action of the air until it is opened for use; and, in the absence of air, paint improves with age—"ripens," as old painters express it.

The first method of making paint is a tradition handed down from workman to apprentice since the middle ages; the second is a result of modern industrial progress. The better grades of modern prepared paints, sold in sealed cans, represent in

the paint industry what the product of the modern flour mill represents in agriculture—the results of mechanical and technical progress.

The Zuni Indian today grinds and sifts his corn and bakes his bread on heated stones, much as the old-time painter "breaks up" and mixes his pastes into paint. The resultant bread of the Zuni Indian and the resultant paint of the conservative painter may be quite as nourishing in the one case and nearly as efficient in the other as the corresponding commercial products—but the modern painter will not work at the price of the Zuni Indian, nor will he work as patiently for results. In short, hand mixing, even though it were as thorough, is too expensive and too laborious for modern demands.

### AMERICAN LINSEED CROP

The importance of linseed as an agricultural product of the United States can be seen from the following table, made up from statistics supplied by the Department of Agriculture and by the Bureau of the Census, Department of Commerce and Labor, giving data by states for 1911 and the totals for the five preceding years:

States.	Production, in bushels.
Colorado .....	21,000
Iowa .....	128,000
Kansas .....	225,000
Minnesota .....	3,200,000
Missouri .....	54,000
Montana .....	3,272,000
Nebraska .....	10,000
North Dakota .....	9,120,000
Oklahoma .....	3,000
South Dakota .....	3,217,000
Wisconsin .....	120,000
Total, 1911 .....	19,370,000
1906 .....	25,576,000
1907 .....	25,851,000
1908 .....	25,805,000
1909 .....	19,512,764
1910 .....	12,718,000

#### Market Conditions in Linseed

The prices of linseed fluctuated during the greater part of last year. The market became firm for a time, based on unfavorable crop reports. The prices paid for linseed were \$136 to \$180 for the La Plata, and \$151 to \$189 for the Bombay, per 4,320 pounds. The total receipts of linseed in Europe during last year were 5,061,000 quarters, of which Argentina furnished 1,948,500 quarters, British India 2,451,000 quarters, and Russia 661,500 quarters. Conditions in the Dutch oil mills were unsatisfactory, owing to fluctuations in seed prices. The highest and lowest quotations for linseed oil last year were \$22 and \$14, respectively, per 220 pounds, and the closing price for the year was \$16.

The prices of turpentine were high during the first three months of 1911, being \$14 to \$18 per 110 pounds, but they gradually dropped to \$8.20 in November, and at the close of the year the ruling price was \$9.20.

### PERMANENCE OF COLOR

Except under special conditions, the sole cause of the fading of colors is found in the action of light. Under ordinary circumstances it is therefore only necessary to ascertain the amount of fading resulting from exposure to light. It is not easy to express this fading in any quantitative manner, so that some color of known behavior will generally be exposed for comparison. Two conditions must be observed: the two colors must be applied in the same medium and in precisely the same manner; they must be exposed to the action of light at the same spot during the same period of time. The most simple way of testing the permanence of a color is to mix it with oil into a paint, then apply it to two similar boards. Place one in a dark cupboard or drawer and expose the other to the light (not direct sunlight). Compare the shades of the

exposed board with the unexposed board after, say, seven days, fourteen days, one month, etc., and note the difference of color at each period. Broadly speaking, it may be said that a color which has faded perceptibly after seven days will have faded very badly after one month, and that colors which show no sign of fading after six months are practically permanent. The amount of direct sunlight which falls on the exposed paints makes a great difference in the rate at which they fade; thus at different seasons of the year in the same place, the rate of fading may vary greatly.

### TWO VARNISH COATS SHOULD SUFFICE

It is of importance that as much of the body of varnish as possible be left upon the surface. Invariably the ultimate results will show that, other things being equal, the varnish carrying the largest percentage of its original depth and body will wear the longest and give the color coats a more efficient protection.

After surfacing the first coat of clear rubbing varnish, and washing it very clean, proceed to apply a second coat of the clear rubbing varnish, using a plentiful flow.

If brush marks are avoided, and the varnish comes forth with scarce a blemish, it will hardly need more than a mere dulling down with the water and pumice-stone flour. For all ordinary good work these two coats of varnish color, and the two coats of clear rubbing varnish, should suffice, but in the event of having extraordinarily large surfaces, such as are found upon some of the paneled-top delivery wagons, another coat or two of rubbing varnish will be necessary.

All advertising or ornamental work, in gold leaf or color effect, applied to the car is expensive and is maintained only through the protection given it by the varnish, which protection is alone to be had through the strength and power of the varnish.

### BLACK AND GOLD VARNISHES

A black varnish for covering leather and which can be roughly handled without fear of breaking, is made up in the following manner: Mix 30 parts of rosin with the equal quantities of turpentine and turpentine oil; add 60 parts of sandarak gum and 120 parts of shellac, after which dissolve the whole mixture in 900 parts of alcohol of 90 per cent. Filter the liquid through fine linen and then mix it thoroughly with 15 parts of fine lampblack which has been dissolved in a little alcohol.

A good gold varnish is made in the following manner: A suitable quantity of shellac is dissolved in the same weight of concentrated alcohol. To this solution is added a 0.5 per cent. solution of boric acid in alcohol, which gives the varnish its consistency. However, the varnish made in this manner is colorless, and in order to produce a golden shade picric acid is added until the desired degree of yellow is reached.

### HIGHLY RECOMMENDED TO CLEAN GREASY HANDS

Soft soap, 1 lb.; methylated spirit,  $\frac{1}{2}$  lb.; ether, 4 drachms; glycerine, 3 drachms. Warm the soap until it is treacly before adding the spirit. It is cheap, and no soap cleanses greasy hands so quickly.

Another: Soft soap, 1 lb.; pumice stone powder, 4 oz. to 8 oz.; naphtha or gasoline,  $\frac{1}{4}$  pint; methylated spirit, 1 pint. A little of it goes a long way, and will remove grease quickly and not injure the skin.

### TIME!

In the French races over the Dieppe Circuit the astonishing rate of 101.67 miles per hour was timed over a level kilometre.

# Automobile Department

## EQUIPMENT NEEDED IN AN AUTOMOBILE REPAIR SHOP

A 6 in. center 6 ft. or 8 ft. gap bed, self-acting, sliding, surfacing and screw-cutting lathe with hollow mandrel, either foot or power driven, with change wheels arranged to cut both metric and Whitworth threads; division plate and overhead motion for driving a milling attachment; a self-centering chuck of 6 in. diameter; a self-centering drill chuck; a 4 in. jaw dog chuck 14 in. diameter; a good practical milling attachment—such as Smart's—with which, by the aid of the division plate, spur gears may be readily cut.

A small sensitive drill, either foot or power, fitted with self-centering chuck.

A pillar drill with back gear and automatic feed, either hand or power driven. This machine must measure not less than 18 in. from center of spindle to the column, so that the largest road wheels usually found on cars may be operated on. This tool will take the place of a larger lathe to a great extent, and allow bolt holes to be drilled in hubs, bushes bored out, and brake drums bored internally by means of a boring bar and cutter passing through the center hole of table.

A brazing hearth, either gas or oil. If the former, a large oil blow lamp should still be carried in the equipment, being very useful for many jobs.

A set of 10 cwt. chain blocks.

A foot or power driven emery grinder or grindstone.

A large cast-iron surface plate for lining out and testing work.

The smaller hand tools need not be dealt with at length, as there is no doubt that if the above plant were invested in, a good supply of hand tools would be purchased as a matter of course. This amount of plant can be added to to almost any extent. It may be considered that it is insufficient even as a minimum, but there are many repair shops and garages handling a large number of cars, and repairing these in a more or less satisfactory manner, that have not even this amount of plant.

## DEFLECTORS AS WINDSHIELDS

Experiments have been made to determine by what form of windshield the driver of an automobile may protect his eyes against wind and dust without the formation of lateral eddies of air and without placing his eyes directly behind the shield, thereby, in the case of rain or snow, obstructing his line of vision.

The results favor a design in which the lower and larger portion of the shield slopes backward at an angle of more than 60 degrees and may be concaved or not, but the essential part is a narrower panel which is adjustably hinged to the upper edge of the sloping portion, and this part must be concaved and must be leaned forward at different angles, the adjustment depending upon the velocity of the air current which the speed of the car and the wind combine to produce. Ordinarily this concaved panel must be tipped to a position in which its concavity is focused upon the ground immediately in front of the car. Its action to shelter the face of the driver is not required until the velocity of the air current reaches about ten feet per second. As the speed of the car is increased, the forward angle of the panel may be reduced. The sheltered region is limited by a curve which resembles a parabola and extends upward and backward from the edge of the shield, and in this region the driver's face is protected not only against the air current, but also against dust and other particles suspended in the air.

In other words, the resultant of the air current caused by wind and motion in the ordinary manner and of the upwardly directed deflecting current caused by the position of the deflector panel, is found to be just what might have been expected, namely, an upwardly inclined current which clears the driver's head.

## SMALL TUBING FOR MOTOR CARS

The motor industry is now a very large consumer of small seamless tubing. Some manufacturers use a copper tubing for all work in their cars, while others employ brass on account of its cheapness. Those who use copper either have found that brass is unreliable for this character of work or that copper is the only reliable material for the purpose, and should be employed for all motor car work. The difficulty with brass is that it is quite apt to crystalize in service. There is no use to which brass is put that is more severe, as far as crystalization is concerned, than automobile work. The constant vibration, coupled with the bending of the tubing back and forth, as it actually does to a greater or less extent in service, is sure to cause crystalization sooner or later, and when it occurs the result is usually disastrous, as though some important member of the car had broken. Copper does not crystalize readily. It will stand vibration, shock, and bending that would soon cause brass to crystalize. Whenever possible the copper should be used soft, as it will then stand an extreme amount of bending, vibration, or torsion without visible effect.

## FOREIGN MARKETS FOR MOTOR VEHICLES

As well as supplying the great home demand for motor vehicles, the automobile manufacturers of the United States are annually making great strides in their invasion of the foreign markets, according to a monograph entitled, "Foreign Markets for Motor Vehicles," just issued by the Bureau of Manufactures, Department of Commerce and Labor. This publication is a compilation of reports from American consuls stationed in every part of the globe, and is arranged with the particular end in view of aiding American manufacturers to extend their foreign sales. It describes the peculiarities of the various markets, special local conditions and prejudices to be considered, foreign competition to be met, and the best methods of selling cars.

Canada is the United States' best market, the majority of the cars in use in the territory of our northern neighbor being made entirely in the United States, assembled in Canada from parts imported from the United States, or made by Canadian branches or affiliations of American firms. The exports of automobiles from this country to Canada have risen from 1,230 in 1909 to 4,687 in 1911.

The high road-clearance, flexibility and moderate price of the American car are steadily winning it favor in regions where highway conditions are similar to those in the United States. The market in Australia and New Zealand is already being well cultivated by American exporters, while Argentina, Brazil, and Uruguay in South America, and British South Africa are named as promising fields for future sales. It is estimated also that there are more American than European cars in use in Mexico.

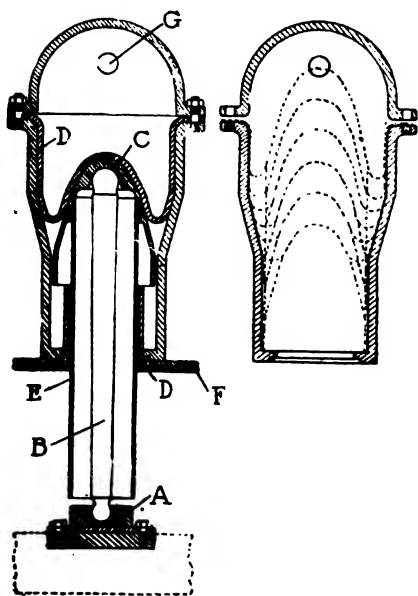
In the Far East, Ceylon, India, Japan, Siam, and the Straits Settlements are the most likely markets. China has little use for automobiles, as most of the roads of that country do not permit their use. The reputation of American-made cars in India suffered some years ago because some inferior cars were sent among the earlier shipments to that country, but the cars brought from the United States recently have been of such high

grade as to dispel this prejudice. In the Straits Settlements the principal buyers are wealthy Chinese, who demand comfort and luxury in their cars rather than high power. As a result, low-hung, smooth running cars are the most popular, and the local trade often demands that each car be fitted in accordance with the individual taste of the owner. Right-hand drive is essential here, as in the Orient all traffic turns to the left instead of to the right, as in the United States.

The United Kingdom has been and continues to be an excellent market for American cars, ranking next to Canada in purchases from the United States, but the sales in Continental Europe have thus far not been extensive. The excellent roads of most of the European countries permit the use of a heavier, lower-hung car than is found commonly in the United States. In England, however, the low prices and complete equipment of American cars are fast increasing their popularity, while they are rapidly overcoming the prejudice against them, caused by doubt as to their durability, due to the sale of many cheap, unsubstantial American-made bicycles in England some years ago. The method of American dealers of putting their cars on the market fully equipped is in strong contrast with the practice of Continental makers, who quote prices on the chassis only, with the body and all equipment listed as extras.

### AN AIR AUXILIARY SPRING

A section of the Hoffman air spring is shown and the manner in which the air bag in this construction conforms, under shocks of different severity, with the contours of the piston by means of which it is compressed. The patent for this construction has been purchased by the Swiss manufacturer, Adolf Saurer, and it is surmised that it will be used for Saurer trucks, perhaps in combination with steel springs and as a means for permitting the use of the same steel springs for vehicles of different capacities. To the vehicle axle is secured the plate A which is formed with a ball socket. The piston rod B is formed with a corresponding ball-shaped lower end, and its upper end is also rounded. It is made integral with the tube E which is arranged to slide in a bushing secured to the vehicle frame F, and the combined piston rod and tube is topped off with a metallic cap C, shaped as a sugar loaf, which

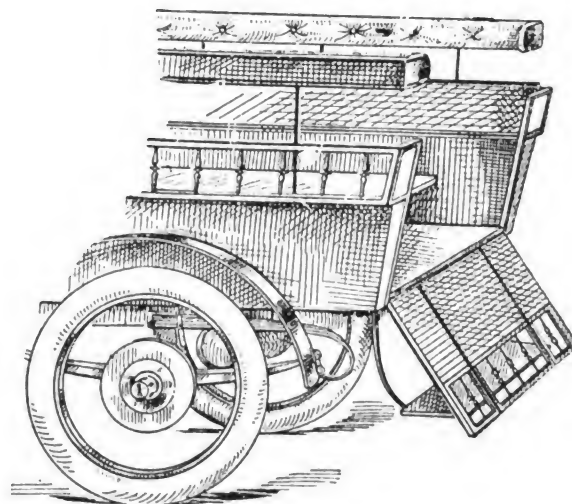


impinges against the membrane D the edges of which are confined under the flanges of a semi-spherical dome bolted to the housing of the device. The aperture G leads, by means of a conduit, to an air reservoir and acts as a moderator of the resilient action. The higher the piston is carried upward into the air chamber the larger becomes that portion of the surface of the membrane D which is supported on the cap C, as indicated most plainly in the second portion of the illustration.

### USES FOR OLD CHASSIS

#### How They May Be Fitted With Bodies for Country-house Use

During the past seven or eight years there have been introduced to the notice of the motoring public a very large number of different makes of motor chassis, and from among them, especially those put upon the market some five years ago, there is a large number of survivors, chiefly chain-driven cars of comparatively high horsepower. So far as fashion dictates the use of a motor carriage, these five-year-olds are out of the running, and are relegated to the back ranks of the second-hand car mart or garage. It is not that they cannot be used, but they are "old-fashioned" in style and finish, and, consequently they have been put on one side. From various sources



the information comes to hand that many of these chassis have passed through an overhaul and been fitted with what were known as "body breaks," the long seats being hinged along the sides so that they could be turned up, if necessary, for the carriage of luggage, forage, etc. Frequently, canopy roofs supported on iron stays and provided with curtains were fitted, and with the assistance of these the open body break was converted into a closed carriage suitable for the conveyance of an evening party.

As the bodywork must clear the rear wheels, and in a chain-driven chassis the side members are straight, there is little difficulty in so arranging the bearing timbers and side panels that the greatest possible width is given to the luggage space with a level floor. If, as is the case with some excellent chassis, the center of the side members has been "dropped," this portion would require to be filled up to attain the level floor necessary for the proper accommodation of passengers and conveyance of luggage. This space, which is generally the width of the chassis, could be utilized as a fitted box, with turn-down hinged doors on either side for tools, spares, etc. It would not be practicable to make a box with access from the interior, for with a load of luggage to remove before the lid could be reached, the chauffeur would not be able to make use of the space.

In the arrangement of the rear entry to the break, the door in the center has often been made to form part of a larger door hinged to the cross member of the body framing and extending the full width up to the corner framing. This enables a large dress basket or other similar piece of luggage to be lifted clear into the interior of the body. A sketch is given showing how this is accomplished. The center door acting for all necessary occasions and the larger one, secured by four ordinary locks, being dropped when required and afterwards closed up and secured.

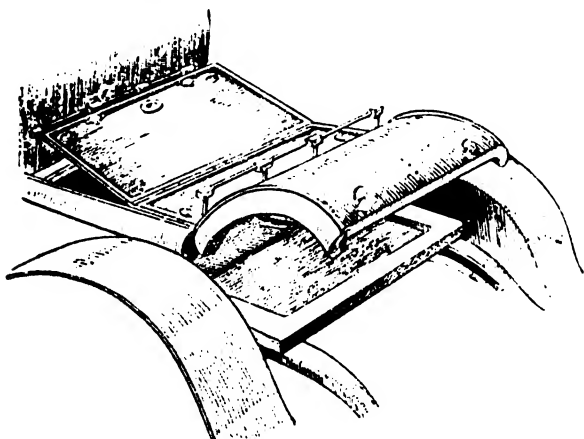
The long side seats are frequently made in two, so that lug-

gage can be placed in one half and the other half used for passengers. For station work this is a great convenience.

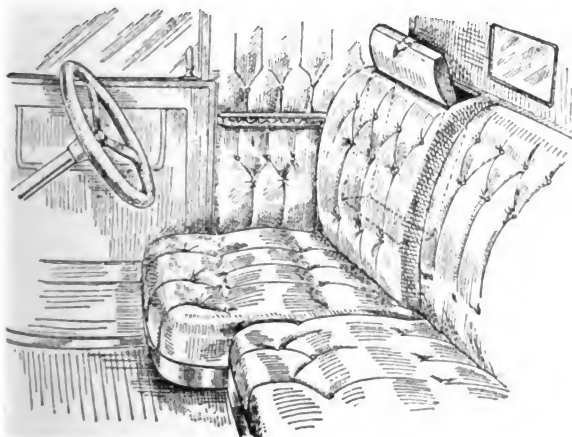
Smaller cars can be fitted with smaller bodies to carry four or six passengers inside or luggage. The question of capacity must be settled by the nature of the work required, and the character of the country. Luggage is heavy, and frequently an apparently light load will represent a considerable weight in avoirdupois, and it is always a "dead" load, and independently of the capacity of the springs and the style of suspension, the effective engine power may not be sufficient to take what might be considered to be an ordinary load. This, says Motor, an English publication, is a point which must be decided upon consideration of all the circumstances surrounding each case as it arises. Certainly the number of good chassis which are put on one side as unsuitable for present-day requirements might find useful employment.

### FOR THE DOCTOR

An inside drive coupe that has been made for a doctor's use is shown in some of its details. Special provision is made for the particular needs of the owner in so arranging access to the "tail" that it will easily accommodate a folding operating table, among other things. This is obtained by so hinging the rear of the tail that its curved extremity can be raised in



similar fashion to the opening of a piano keyboard, so that the appliance can be slid bodily in from the rear; the rubber-faced top, which gives space for the carrying of another table, is also hinged, giving additional access to the more forward portion of the boot. A very capacious receptacle is also located immediately behind the back upholstery of the driver's seat, access



thereto being from the top, which is hinged, and arranged in such a way that its presence is unsuspected. This feature is rendered possible by the position adopted for the seat, which is placed about four inches forward of that of the passenger, a scheme which has the additional merit of giving the driver's left arm plenty of room in its steering movements.

### LION MOTOR CAR CO. REORGANIZED AND BURNED FACTORY AT ADRIAN IS REPLACED

The Lion Motor Car Company, of Adrian, Mich., whose plant was totally destroyed by fire on June 2, is again in the field. A reorganization has been effected and a new plant obtained, and the first car ready for demonstration. Within 90 days the new factory will be turning out its full quota of cars.

The Industrial Association of Adrian guaranteed \$100,000 to keep the factory. The Wing & Parsons Company plant has been taken over by the Lion Motor Car Company, and the new machinery is being rapidly installed.

The new plant is considerably larger than the former one, taking in six acres.

The factory organization remains practically intact, only one or two changes in the personnel having taken place.

"We expect to deliver upwards of 3,000 cars for our 1913 season," says L. B. Sanders, sales manager of the Lion Motor Car Company. "Incidentally, we have one or two things up our sleeve, which we believe are going to create a great sensation, but no matter what new models we may bring out in the future, we are nevertheless equipping our plant with full facilities for taking care of all our present standard models, and for maintaining the service to owners, which we consider one of the strongest assets of our business."

### HOW THE AUTOMOBILE GROWS

The Automobile has been taking a census, as from July, 1911, to July, 1912. Its findings are tabulated as hereunder. It estimates that 252,569 cars were built in the elapsed time stated.

Total Registration, January 1 to July 1.....	859,858
Per cent. increase over entire year 1911.....	18.8
Truck registration, January 1 to July 1.....	31,574
Per cent. increase over entire year 1911.....	24.0
Total amount received in fees, etc.....	\$4,769,873.29
Per cent. increase over entire year 1911.....	19.6
Average population per car in United States.....	110
Car output, July 1, 1911, to July 1, 1912.....	252,569
Per cent. increase over calendar year 1911.....	20.7
Value of 1912 automobile exports to June 1.....	\$11,139,125
Per cent. increase over five months of 1911.....	23.5
Value of 1912 automobile imports to June 1.....	\$952,053
Per cent. decrease from five months of 1911.....	8.6
Automobile companies incorporated in 1912.....	801
Total capitalization of new companies.....	\$136,956,740

### FOLLOWING ARE RECENT INCORPORATIONS IN THE AUTOMOBILE TRADE

Canton, O.—Central Motor Car Co.; capital \$25,000; by R. F. Wilson and others.

Corinth, Miss.—Corinth Auto Co.; capital \$10,000; by W. A. Stewart, W. A. Hinton.

Cleveland, O.—Arter Auto Carriage Co.; capital \$20,000; by John G. Arter and others.

St. Louis—Burns-Ramsden Motor Car Co.; capital \$10,000; by Louis Burns and others.

South Bend, Ind.—Otis Motor Car Company; capital \$10,000; by N. L. Otis, J. B. Beattie.

Newark, N. J.—W. S. Motor Truck Mfg. Co.; capital \$300,000; by J. M. Woods, C. J. Tebbetts.

Newport, Ky.—Central Automobile Co.; capital \$15,000; by Walter P. Dickerson and others.

Rochester, N. Y.—Shafer-Decker Co.; automobiles; capital \$50,000; by C. P. Schoellkopf and others.

Cincinnati—Cincinnati Motor Car Co.; to manufacture motors; capital \$10,000; by C. D. Wilson and others.

Wilmington, Del.—Rutenber Motor Co.; capital \$1,350,000; by N. P. Coffin, W. J. Maloney, H. E. Latter.

Peru, Ind.—The Brown Commercial Motor Truck Company; capital \$100,000; by W. H. Brown and others.

Buffalo, N. Y.—Stewart Motor Corporation; capital \$250,000; by T. R. Lippard, president. The company will occupy the old



Niagara Machine & Tool Works plant at Jefferson, Superior and Randall streets.

Cincinnati—Welbon Motor Car Co.; to manufacture motor cars; capital \$25,000; by W. E. Welbon and others.

Jersey City, N. J.—Thos. G. Wolverton, general automobile business; capital \$10,000; by C. A. Cole and others.

Westfield, Mass.—Westfield Motor Truck Co.; deal in automobiles; capital \$100,000; by W. F. Mogil and others.

Chicago—Fargo Motor Car Co.; to manufacture and deal in autos and supplies; capital \$50,000; by Jos. J. Kral and others.

Paterson, N. J.—Watson Electric Co.; capital \$50,000; to manufacture electric motors, etc.; by C. F. Watson, A. B. Watson.

Chicago—Herreshoff Motor Company of Illinois; to manufacture and deal in autos; capital \$500; by T. C. Woddingham and others.

Portland, Maine—Edwards Motor Car Co.; to manufacture and deal in motor vehicles; capital \$2,000,000; by C. E. Eaton, T. I. Croteau.

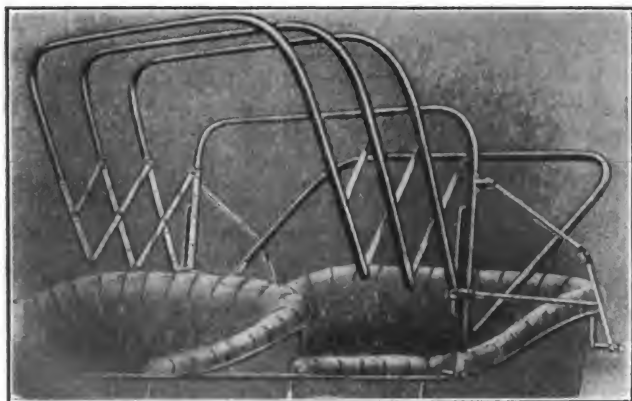
Fresno, Cal.—Essenkay Sales Company of Fresno, Madera and Tulare counties; to handle automobiles, etc.; capital \$10,000; by H. M. Shaffer and others.

### MACK TO ENTER MOTOR FIRE APPARATUS FIELD

John M. Mack, of Mack Brothers, makers of the Mack line of auto trucks, now included in the product of the International Motor Company, has resigned as vice-president. It is announced that he has formed a \$600,000 corporation to manufacture automobile fire engines and automobiles at Allentown, Pa., and has secured control of the Webb Automobile Fire Engine Company, of St. Louis. It is stated that the manufacturing operations will be transferred from St. Louis to Allentown and that the new company has secured the plant of the Allentown Machine & Foundry Company, to which will be added a brass-making plant now located in Philadelphia and controlled by Mr. Mack.

### BOW ARRANGEMENT FOR HOODS

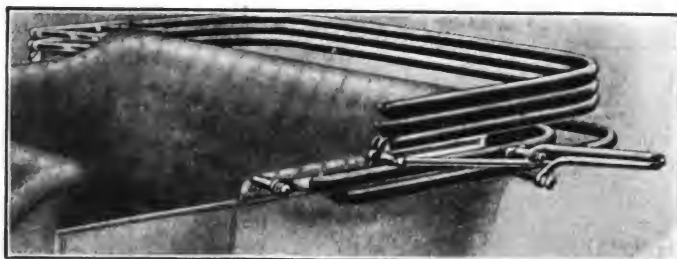
Two illustrations, one up and one down, show how the bows of an automobile hood are joined to make an extension device easily operated by one person standing inside a car; also how compact the bows can be nested when thrown back. This hood



bow arrangement is called the Astill, is an English idea, and this is how the makers describe it:

The mechanism consists of a main side arm or bar provided with a slot, which is attached to the upright stick found just in front of the hind seat on each side of the car. To the top of this slot arm is attached the lazy tong frames, which forms the principle device for extending and folding the hood. Three of the usual wooden bows are screwed to the lazy tongs on either side, the front one falling horizontally when the mechanism is stretched to its fullest extent. The fourth stick is fas-

tened at the slot bars, while the last stick is screwed to the finger plates, centered in the usual way. This hood is furnished both with and without outside joints. The last pair of tongs are fastened respectively to the top of the slot bar by fixed and shifting pivots, the movable one being arranged to work in the guiding slot so that as the lazy tongs frame holds or opens



out the pivot traverses this guiding slot. Attached to the lazy tongs end, which slides in the slot described, is a barrel spring, the other end of which is centered to the lower half of the outside joints. The effect of this spring is, as the head is being let down, to automatically break the knuckle joint so that the hood can be closed by a person standing inside the vehicle at the front with ease.

### AUTO SHOW DATES

At one of the best attended meetings of the year, the Automobile Board of Trade at its quarterly gathering in New York City in July, listened to the report of the Show Committee, covering plans for the big exhibition of next January, which will be conducted in two buildings—the new Grand Central Palace and the Madison Square Garden, with a single admission covering both buildings.

It was definitely decided to open the show on the evening of January 11, 1913, with an exhibition of pleasure cars in both buildings, continuing until the 18th. The commercial vehicle division, which will be held in both buildings, will open on the evening of Monday, January 20, closing on Saturday evening, January 25.

Suitable resolutions were passed on the death of Mr. Alfred N. Mayo, of the Knox Automobile Company, one of the oldest members of the Automobile Board of Trade and a leader in the industry since its inception.

It was also voted to begin compilation of data for the publication of the 1913 hand book.

### DE DION BUSES FOR NEW YORK

The Dion-Bouton Company, of Puteaux, France, has received an order for 24 double-decker motor omnibuses from New York. They are to be of the same type as the Paris omnibuses of the same manufacture excepting that the seating capacity is raised to 42 by utilizing the tops of the vehicles for seats.

### AUTOMOBILE WHEEL WORKS FOR NASHVILLE

The Seaton Wheel Co. has been organized at Nashville, Tenn., with a capitalization of \$130,000, to manufacture automobile wheels. The following are the incorporators: Granberry Jackson, Samuel Lord, B. C. Seaton, John T. Landis and J. Ray Boone.

### CHICAGO HAS A "CHAUFFEUR FACTORY"

While many of the so-called chauffeurs' schools prefer to designate themselves "colleges," or "academies," there is one such institution in Chicago that frankly styles itself a "chauffeur factory."

# Smith Shop.

## BALL BEARINGS

"There are few appliances which behave so well when properly mounted, but which give trouble so quickly if one or two small details are not attended to," said G. F. Barrett, in a paper which he read before the British Institution of Mechanical Engineers.

"The failure of ball bearings, apart from that due to direct overload," he said in part, "may be roughly attributed to five causes: faulty design, material, workmanship, mounting and bad usage. As regards the first of these, Professor Stribeck proved beyond doubt that in a ball bearing to carry journal loads the balls should have only two points of contact; that is to say, one on the stationary and one of the revolving race, and that these two points of contact should be in a line at right angles to the axis of rotation of the bearing and parallel with the load.

"The curvature of the ball race naturally plays an important part in the life of a ball bearing. Owing to the fact that the path of the balls round the inner ring is convex and round the outer ring concave, it follows that the track on the inner ring is the weaker of the two; and for this reason the curvature of the ball race in this ring is made to a smaller radius than the curvature of the outer race, so that the load carrying capacity of the two races shall be the same. The nearer the curvature of the ball races approaches that of the ball, the greater the load it will sustain, but the friction and wear, of course, go up in proportion. It is found in practice that a curvature about five to ten per cent. larger than the radius of the ball is the most suitable.

"A cage is necessary to separate the balls, as, if no cage is provided, the slight difference in the speed at which the balls travel round the races, caused by the deflection of the balls as they go round under the loaded portion, bunches the balls together, and the friction caused by the points of contact of the balls with each other, running in opposite directions at a very high speed, produces such intense local friction that the steel is worn or burned away so as to form grooves or flats around the balls. The pressure required to keep the balls apart, provided that the bearing is properly mounted and the load applied correctly, is very slight indeed—so slight as not to cause any appreciable wear whatever on the ball cages. If, however, loads come upon the races which tend to cant them out of true concentricity with each other, some of the balls will be driven up the sides of the track, and the alteration in the speed of these balls rolling round a larger diameter of track will exert sufficient pressure to destroy any cage unless it is of substantial construction. A great deal of trouble in the past has been caused by the cages being too light and flimsy.

"The comparative strength of the various designs of a journal bearing of a given size will depend, other things being equal, upon the number and size of the balls; the number of balls is regulated by the amount of space that it is considered desirable should be left for providing room for a strong and efficient cage, and the size of the balls by the thickness that is required for the ball races. In bearings having unbroken rings—that is, without transverse slots, the number of balls is limited to that which can be got in by placing the rings eccentric. In bearings with a transverse slot for inserting the balls, the number is only limited by the cage, but great care has to be taken in producing these slots that they do not interfere with the continuity of the ball track, and that the bearing rings are not overstrained in introducing the balls, or the balls themselves

damaged. Provided that these points receive every attention in manufacture, the latter form of bearing is considerably the stronger.

"Another form of bearing which has recently been brought into prominence is that having two rows of balls running in two grooves in the inner race, and in an outer race ground spherical from the center of the bore. By this means two or three balls at the last must always be carrying the load as against one or two with the single row, but here, again, this is obtained at the sacrifice of making the outer ball race of so much greater curvature than the ball that the load carrying capacity is not increased above that of the single row bearing.

"As regards material and workmanship, it is hardly necessary to say that these should be the very finest possible. Only the most uniform and the very hardest material that it is possible to obtain should be used for the ball races, owing to the tendency that the material has to flow away from beneath the ball under pressure. The ball races should be accurately ground and polished, as any roughness left from the emery wheels will make the bearings noisy.

"A most important point is the accuracy of the steel balls. These can now be obtained commercially correct to standard size to within one ten-thousandth part of an inch, and this is not, as with many articles, merely a figure of speech, but is absolutely true. It is this feature, as much as any, which has made ball bearings a success. The steel used for the balls should have a high elastic limit when hardened, as it is the elastic limit of the surface of the balls which is the limiting factor in their load carrying capacity. The cages should be made of a tough and uniform yellow metal, as steel or iron tend to lap down the balls. Owing to the extreme accuracy which is now possible in the commercial manufacture of steel balls and ball races and the reliability of the material, failure due to faulty material or workmanship should be of rare occurrence.

## HOW I BUILT A SPARK-PROOF FURNACE FOR HEATING TIRES

In the matter of setting heavy tires I was in a quandary for several years for some way of heating them without endangering the town from open fires. In the spring of 1910 I studied out and built a brick furnace which I have since used with great satisfaction. Thinking that a description of it might be interesting to your readers, says A. S. McArthur, in *American Blacksmith*, I submit the following:

Foundation, cement; furnace, 29 rows of brick; ash space, 5 rows; fire space, 20 rows; top deck, 2 rows; roof, 2 rows. The inside is 18 inches wide and takes a tire 4 feet 9 inches in height. Built in with the fifth row of brick are two heavy iron crossbars for the tires to rest on. Level with the top of the doorway are four or five flat iron crossbars on which rests a piece of sheet iron fitted neatly to the brick in width and extending from the front to within eight inches of the back of the furnace. This forms a top deck or baffle in the draft where all the sparks fall; they do not make the second turn. The smoke has to enter the top deck at the back and come forward to the front before going up the chimney.

On top of the twenty-seventh row of bricks are built in five or six flat iron bars or rafters, crowning about two inches. These are overlaid with sheet iron (except the opening for the chimney) and covered with a row of brick. On this row is set the base for the chimney. Then the last row of brick

is laid, projecting all around for appearance, and the water-drip finished over all with a good coat of cement, which leaves the roof waterproof.

The chimney is 12 inches in diameter and 6 feet high, stayed with three guy wires.

The door frame is 4-inch bandiron. The top corners are held firmly by back plate riveted across the joint. Level with the bottom of the tire space is a  $2 \times \frac{1}{2}$ -inch iron riveted firmly to the back of the frame. The three doors are made of No. 12 gauge sheet iron and are 21 inches wide, lapping  $1\frac{1}{2}$  inches on the brick wall, hinged with butt hinges, put on with  $\frac{1}{4}$  flathead stove bolts, countersunk inside, nuts on outside. The top door is swung on three hinges. The doors are hinged, latched and all completed before attaching the frame to the furnace.

The chimney base is made of 12-gauge sheet iron, bent to an oval, edges meeting even and held by inside plate and countersunk bolt, nuts inside. One end is split up  $1\frac{1}{2}$  inches, about every  $1\frac{1}{2}$  inches all around. These split pieces are then bent out to a square, open at top and set in place. The last row of brick is built on top of this flange, holding it firmly in place. The chimney pipe is common galvanized iron, two lengths.

In the doorway is seen an iron poker with a special hook on the end. I open the second door and if the tires are heating too much in one place I grip the edges with this hook and pull them around. I do not need, therefore, to open the top door until I want to take out a tire. I find, too, that this method requires only half the fuel.

As reinforcement for the brickwork I had 14 stay-irons placed in the wall lengthways and four or five crossways at the back end.

Long stay-irons are made of old steel buggy tire, rounded up and threaded to a half inch at one end and 1-inch square bend at the other end to hold against the brick. The short stay-irons are  $\frac{3}{8}$  inch round, with a washer and nut on each end.

To begin building, the first thing needed is a false door frame. Use 1-inch board, 7 inches wide, make it the same width inside as furnace, that is, 18 inches, and place it in position where you wish the front of the furnace, plumb it both ways and stay it firmly with a brace at the top. Then build the brickwork to it. As you work up and want to use a stay-iron, bore a  $9/16$ -inch hole where needed and run the threaded end of the iron through this hole until the hook at the other end comes against the brick, and so on until finished. Then remove your false frame intact, lay it evenly on top of your iron frame and mark all those holes on your iron frame. Then bore those holes  $\frac{5}{8}$  of an inch. Now place your frame into your furnace, screw up the nuts, and your frame and doors are all held solid and firmly, and the furnace is ready for use. In fitting the doors to the frame leave a good  $\frac{1}{8}$  inch between the doors for expansion, and also  $\frac{1}{8}$  inch between the door and the frame.

No. 12 gauge iron can be purchased in sheets of 30 by 72 inches from any hardware dealer. One sheet being all that is necessary for a furnace.

The brick used was ordinary good, hard building brick. Should I build another furnace, however, I would allow four rows of brick for the ash space and three rows for the top deck.

My furnace, counting my own time, cost me about \$25.

### WIRE WHEEL CONSTRUCTION

Arguments for and against the wire-spoked suspension wheel continue to engage European attention. Says one authority: "The wire wheel must be perfect or not at all. It is a rigorous necessity in its construction that the initial tension of the spokes should be greatly superior to the tension to which these spokes will be subject by reason of the weight of the vehicle and its load. Unless this precaution is taken there will be a stretch-and-contraction movement in each spoke every time it passes from a work-position to a rest-position, as the

wheel revolves, and its head will soon wear through its socket in the rim. In the Rudge-Whitworth, of the triple-spoke type, the initial tension varies from 526 to 720 kilograms per spoke, and twenty to twenty-five spokes support the hub at the same time, so that a large margin of security is provided at this point. The greatest obstacle which the development of the wire wheel will meet will undoubtedly be the deluge of poor wire wheels which will follow the success of the good ones. To make a wire wheel it is not sufficient to lace any kind of rim to any kind of hub with iron wire. The rim must be special—pressed cold from special material in a special machine—with certain necessary variations in the thickness of the metal; the spokes must be special and specially strung, and the hubs, too, must be special; for a hub that is too short is the greatest insecurity of all."—La Pratique Automobile.

### RUSTPROOFING

An important advance step in this matter is detailed in the account of a method patented in Great Britain. It consists in submerging the object, for  $2\frac{1}{2}$  to 3 hours, in a boiling solution of diluted phosphoric acid and iron shavings, after it has first been subjected for a few seconds to the action of a boiling solution of potassium or caustic soda. When withdrawn from the final bath it has an agreeable blackish appearance, which, according to a communication to the Birmingham University Metallurgical Society, is due to the conversion of the surface molecules of the object into a mixture of ferrous and ferric phosphates. This film is very resistant to atmospheric influence, but may be coated, after drying, with linseed oil or paraffin. It is not stated whether the phosphoretted film will accept copper or nickle plating, but it is recommended as a substratum for enameling or painting.

If the object to be treated is not perfectly clean and free from incipient rust, it should be pickled first, and preferably scrubbed with a soft wire brush revolving at 800 revolutions per minute. The solution of iron shavings and phosphoric acid may be prepared in a wrought iron vat heated with a Bunsen burner or by steam pipes.

### TITANIUM IN STEEL

Titanium steel is fast growing in favor for automobile use. It derives its name from the fact that the metal titanium is used to still further purify the bath of molten metal, after all of the other elements have been added and the work of the steelmaker practically finished. It is the newest of the alloy steels and has been in use but a few years. The first heat that was made in America was poured in 1907, but since that time its progress has been such that the output of the titanium steels is now greater than the combined output of all other alloy steels. It increases the cost of the metal less than \$1.50 per ton and adds properties that cannot be obtained with any other alloying material.

Titanium belongs to the same chemical group as silicon. There is a considerable quantity of it in the earth's crust and in many parts of the world it occurs as a natural ingredient of iron ore. Here, however, it has been a detriment to steel-making, principally because of its action on the lining of furnaces, which are quickly burned out when titaniferous ores are used.

### TOUGH, ELASTIC SPRINGS

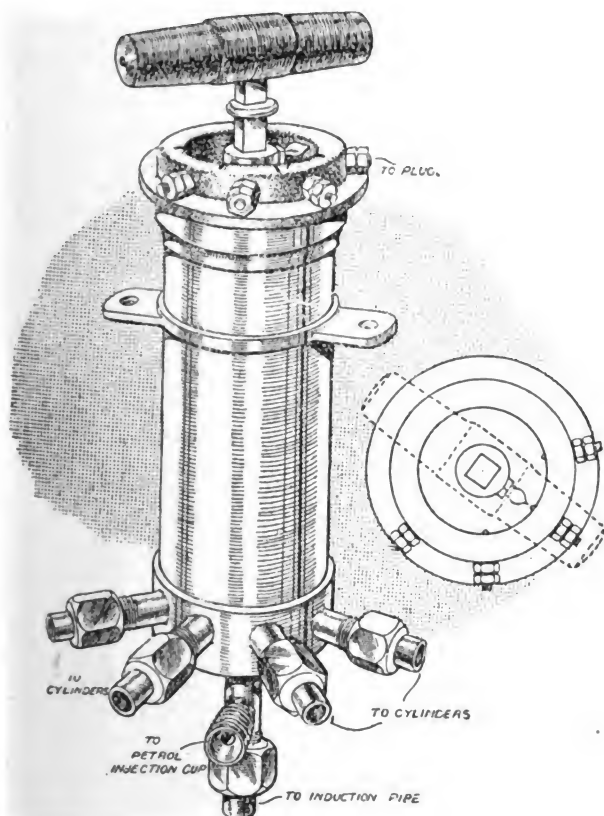
With silico-manganese steels, carbonizing can be done away with and the steel given the ordinary heat treatment after it has been manufactured into gears. There is much difference of opinion as to its practicability for automobile gears.

Its fibrous structure in the direction in which it is rolled and the toughness that is given it by the manganese, when the steels are well made, seem to make it one of the best steels on the market for manufacturing into leaf springs. It is, there-

fore, used to a large extent on some of the best cars for this purpose and its price is not high, when compared with other alloy steels. When properly heat-treated for automobile springs and then broken for examination of its grain, it shows a tough, hickory fracture, and it is not difficult to obtain an elastic limit of 225,000 pounds with a tensile strength of 250,000 and an elongation of 12 per cent.

### A NEW STARTER

The Ashford self-starter has been introduced with the object of enabling an engine to be started without the usual trouble of cranking. It is of the type of starting apparatus in which an explosive charge of gasoline and air is introduced in one or other of the cylinders and an electric spark caused to ignite the charge, the spark being produced by means of a trembler coil and battery. This device offers the advantage of simplicity in construction and comparative ease of application to any car or engine. It consists, in its main feature, of a large hand pump, which draws a charge of explosive mixture direct from the carburetor, this operation being performed on the up-stroke. On the down-stroke the explosive charge is directed into one of the cylinders by means of a simple distributing system. It will be noted from the drawing that there are four radial



terminals. These connect by means of wires to the sparking plugs, and form a sort of duplicate connection. On the shaft of the pump, just below the handle will be noticed a sparking point. This forms the electric indicator to show which cylinder is in a position to fire. The handle of the pump is turned round until a spark jumps from one of the terminals to the sparking point. When this is determined the handle is advanced to the mark past the terminal, and this has the effect of putting the pump in direct communication with the correct cylinder to fire. On sharply raising and depressing the pump handle the explosive charge is induced and directed to this cylinder. The charge comes in contact with the spark which is passing across the electrodes of the plug, consequently it will ignite and the engine will start.

The electric indicator shows infallibly which is the right cylinder to pump the charge into, and the spark can be obtained either from an ordinary dual ignition system in conjunction with the magneto or by means of a special coil and accumulator with a starting switch supplied with the starter, a high tension wire being connected between the coil and the main terminal of the distributor of the magneto and the engine. If a start on the first stroke of the pump be not obtained several strokes can be readily given it, which has the effect of putting a high pressure charge into the cylinder, or each cylinder can be charged in turn before switching on. The pump can be mounted in any convenient place on the dashboard or running board, and no difficulty should be found in making the necessary connections between the engine and the pump.

### DIESEL CRUDE OIL ENGINE FOR CARS

This engine is being subjected to experimentation at present with glowing prospects of future usefulness. The explosion is obtained by the compression of the air in the cylinder to the very high pressure of 500 pounds per square inch, a pressure which is something like seven times greater than the ordinary compression obtained in motor car engines. The compression raises the temperature of the air to such an extent that when atomized oil is introduced as is done when the extreme pressure has almost been reached, an explosion takes place. The engine is constructed on the four-cylinder principle, the means for driving out the exhaust being much the same as usual. It follows that to introduce the atomized oil into the explosion chamber it is necessary to have a higher pressure behind it, and it has been found in practice that a pressure of 700 pounds to the square inch is necessary. This air is compressed by the engine itself, not directly from the atmosphere, but in three stages, three suitable cylinders being used for the purpose. This apparatus somewhat counteracts the advantage obtained by doing away with the carburetor, sparking plug and magneto or accumulators, but it is claimed by the inventors that the apparatus is much simpler than the use of the above-named parts.

### SIX AND EIGHT CYLINDERS

The moment the six-cylinder motor has become widely accepted as representing luxury in motor power in a degree not quite attainable in the standard four-cylinder type, the inquiring mind at once moves ahead one notch and asks: "Why, then, is not an eight-cylinder motor still more desirable?" The old objection, usually dressed in the term "the more cylinders the more trouble" evidently no longer holds good. It is this question which is put and answered in a recently published description of the latest type of the De Dion-Bouton eight-cylinder automobile, in which the motor is of the V type and develops only 20 horsepower, according to the customary low French valuation, the motor dimensions being 24 5/8 x 5 1/5 inch.

The French manufacturer defends his construction on purely mechanical and economical grounds. The eight-cylinder V-motor is cheaper to build and easier to build right, it is stated, than the six-cylinder vertical motor. It is generally admitted

connections at the base of the pump, each one being joined up to a cylinder by means of a small bore tube. These pipes communicate to the cylinders by means of unions screwed into the exhaust caps, or any convenient fitting giving access to the combustion chamber. Suitable check valves are provided in the unions to prevent the pressure being exerted back along the piping.

It will be noted that at the base of the pump cylinder there is a union for making the connection to the induction pipe, along which the explosive mixture is conveyed to the pump. Just near this union will be found another connection, to which is attached a small "priming" cap, the object of which is to enable a small quantity of liquid to be drawn in on the up-stroke of the pump and ensure a rich mixture. This priming is not always necessary, but may be found useful when the engine is quite cold or the weather conditions are unsatisfactory for efficient carburetion. At the top of the pump are four

that eight cylinders give a more uniform torque than six cylinders, while very little is gained by increasing the number beyond eight; the overlapping of the power strokes is completed by eight cylinders, allowing that the expansion of gases covers about 90 degrees for each explosion (from the moment high pressure is reached to the opening of the exhaust).

The crankshaft of the eight-cylinder V-type is the ordinary four-cylinder crankshaft, only thicker, while the six-cylinder crankshaft is expensive to make and difficult to fortify against torsion and vibrations. With regard to compactness, while eight cylinders fill the bonnet quite snugly crosswise, the motor is no longer than a four-cylinder motor on one-half its power. It gives that opportunity for comfortable and spacious disposition in the carriage arrangements which it is difficult to obtain in a "six" without an over-long wheelbase. No similar advantage could be obtained with six cylinders by arranging them on the V-plan, as the angle of the V would have to be 120 degrees and this arrangement would make it impossible to get room under an ordinary bonnet, while the cylinders would also be more nearly horizontal than vertical and might be difficult to lubricate. Only the motor with eight cylinders can therefore participate in the benefits of the V type, which are considerable. It gives rise to a very symmetrical design. The same camshaft with eight cams which serves a four-cylinder motor serves the two groups of cylinders.

The organs of carburetion and of ignition repose in an excellent location in the lap of the V. The two carburetors mounted together, and whose air valves are controlled from the same spindle, supply each one of the two groups of cylinders. These two carburetors are supplied with gasoline from an auxiliary small gasoline tank which is mounted on the motor-side of the dashboard, and this auxiliary tank is always kept full by means of an air pump which places the main reservoir under pressure. For starting the motor, and after a filling of the main tank, the air vent of the auxiliary tank is opened, and the start is made by gravity feed, but the vent is then closed and thereafter the air pressure in the main tank does the work.

### ELECTRIC DRIVE OR FRICTION CLUTCH?

The specialization to which the construction of modern wood-working machinery has been subjected in order to obtain results commensurate with the improvement in the mechanical equipment of other industries, has tended to concentrate the attention of practical wood-working operators on the various factors influencing the cost of production.

We have the advocates of electrically-driven machinery no less enthusiastic than the devotees to the friction clutch. Each of these methods in a factory has some disadvantages, yet there is no question but what either is far superior to the old, and still most common, method of having the whole factory driven from one main drive, with no mechanical arrangement for instantly disconnecting one group of machines from the rest of the equipment.

The manufacturer who has come to the realization that it is folly to run the shafting and pulleys in his whole plant when it is necessary to operate one or two departments overtime, will do well to carefully consider each proposition. So also will the one who frets and fumes over loss of time when it is found necessary to shut down the whole plant because some of the equipment is broken down.

Many a manufacturer is so located that it is not practical either to buy his electric power from a general plant or to install his own electric-power system; or, he may be so situated that he is in possession of a first class steam-power plant, with good boilers and engine and a good equipment of shafting. In such a case, unless he is about to install more machinery than his present power will care for, it will not prove practical to install electric power. On the other hand, says Wood-Worker, the management which finds it necessary to throw out its old engine, etc., will find it advantageous to compare carefully both the friction clutch and the electric drive. He should

not jump at conclusions too quickly, but will do well to consult a practical engineer whom he can trust, and theoretically test out one against the other, to see which will prove the most practical to him.

So far as operating efficiency goes, there is a great deal in common with these two systems.

### OIL AND LEATHER

The application of oils in the manufacture of leather dates back a good many hundred years. Apparently in Hungary around the twelfth century oils were first applied, when the oil-tanned or chamois leather was discovered. Since that time the uses to which oils are put in the production of leather are manifold, so that today the consumption of oils and fats by the leather industry has assumed enormous proportions. The main object for applying oils and their products to leather is to render the leather soft and pliable, tough and strong and resistant. It is essentially a lubrication of the fibers, relieving the frictional action of these fibers against each other. Without such lubrication the heat produced by the friction of fiber against fiber, especially in leathers under constant and heavy strain, would soon destroy them. Besides for this purpose, the oils, fats and waxes are utilized for producing coatings on leather, for filling leather and for water-proofing leather.

The leather oils comprise all the classes of oils, fats and waxes and different effects are produced by the various ones. Of those, the fatty oils and their products are most readily assimilated by the fibers, giving the leather a full mellow feel and constituting the best oils for leather. An essential feature of the fatty oils is that they are freed from stearine, for, as pointed out, this ingredient is likely to cause spew on the leather.

### INGENIOUS TIRE PUMP

French ingenuity is displayed in the cheap and simple tire pump illustrated. The attempt is made to produce a power-driven tire inflating pump at a very moderate price, and to render the apparatus so simple and reliable that it can be depended upon for general use.

The general view (Fig. 2) shows the apparatus in position. It consists of a double piston pump held on a swivel-headed bolt, which is secured to one side of the chassis frame. Connected with the pump pistons is a flexible steel band which runs across the chassis to an adjustable holding piece bolted to the other side of the frame. A pulley with a split sleeve is provided for clamping on the propeller shaft, and the apparatus is then complete save for the pressure gauge and the flexible tubing leading to the tire.

It is necessary to refer to Fig. 1 now, which illustrates the pump in section. P1 and P2 are the cylinders in which the pistons (P1 and P2) work. The stems of the pistons are connected by the cross-piece (A), through the center of which passes the

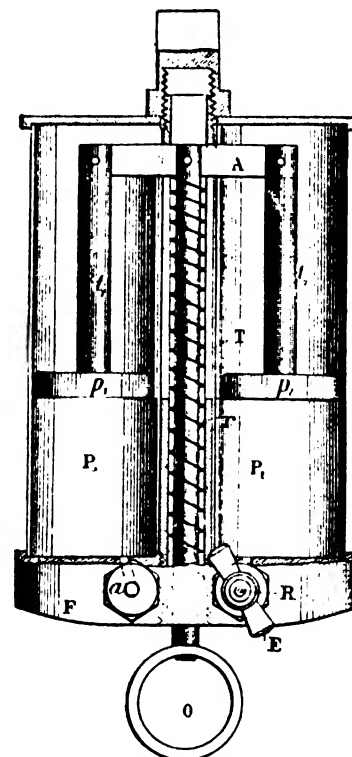


Fig. 1—Section of the pump of the Z tire inflator



rod T, terminating in the ring O. A spring (R) acts on the rod T, and consequently on the pistons, securing their upward return in the cylinders after being drawn downward. At A is the air inlet valve, and R is the outlet for the compressed air, with the hose attachment (E).

The action of the pump will now be obvious from a glance at Fig. 2. On the propeller shaft is mounted the pulley, thus forming an eccentric, which bears on the flexible steel band running from the ring of the pump to the holder at the other side of the frame. This holder is adjustable, so that by a simple movement the band is so slackened that it no longer makes contact with the pulley. To set the pump in motion, the holder is adjusted so as to bring the flexible band in fric-

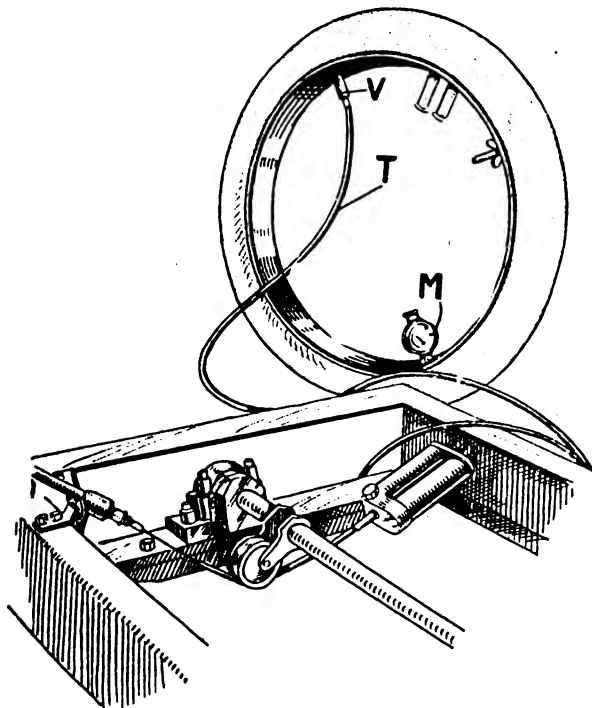


Fig. 2—The Z power-driven tire pumping set

tional contact with the eccentric pulley on the propeller shaft.

When the engine is set in motion the pulley bears on the steel band with maximum pressure at one portion of its revolution. This pull is transferred to the ring of the pump, and so to the pistons, pulling them downward, and thus compressing the air in the cylinders. The swivel coupling allows the pump to swing downward to a certain extent. Then, when the revolving pulley gets out of contact with the steel band, the spring (R) of the pump acts on the pistons, drawing them upward, and taking in a fresh charge of air.

Thus, by a notably simple method, reciprocating motion is obtained in the pump, and as the holder is readily adjustable no difficulty should be found in keeping up the proper tension. To throw the pump out of action it is only necessary to release the tension, whereupon the eccentric pulley runs idle. It is claimed that a large tire can be fully inflated in 45 seconds.

### WESTINGHOUSE AIR SPRING

Advantage is taken in the construction of the Westinghouse spring of the perfect elasticity of gases, more specifically of air. If air is compressed to any degree and then permitted to expand again it will, if the original conditions be reached, assume its full former volume.

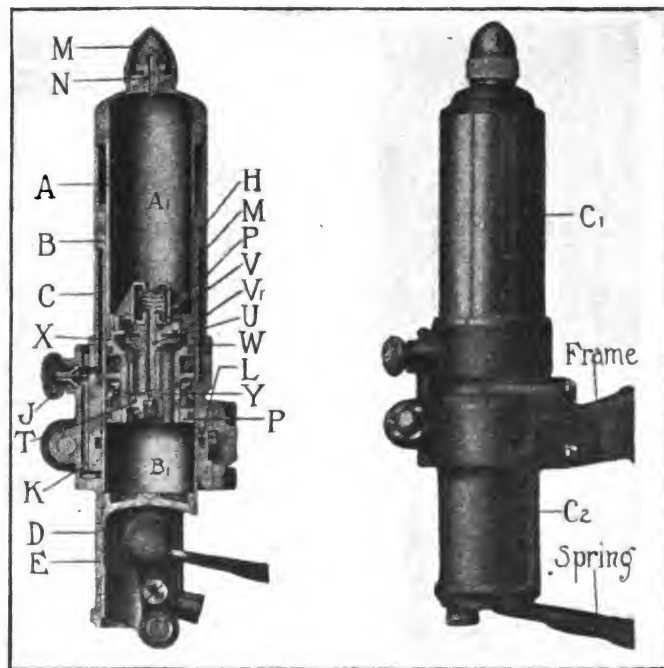
Two tubes, A and B, telescope, and a third tube C keeps foreign matter out of A and B. The cross-head E and the tube B to which it is attached are guided in their movements by the steel casting D. At its top end B is enlarged to form

a piston which is packed against C by the packing H. The breather J is an inlet air valve packed in fibrous filtering material, which, like the felt wiper ring L, serves to keep dust and grit out of the mechanism. If A and B are moved to compress the air in A, the space between B and C is enlarged and air is drawn in through J. Upon the air in A expanding again the air which has entered through J passes through the passage K into a port surrounding B, and as there is no packing below this point, between B and D, the air blows out between B and D, again serving to keep out foreign matter. The air valve N is designed to adjust the amount of air in the tube A, and M is a screw cap covering it.

The piston PP is fixed to the lower end of A to insure a tight joint between it and the tube B. For this purpose two packing rings and a cup leather are used. U is the hollow plunger of a single-acting pump. Two collars V and W are secured to the upper end of the plunger, and a sliding disk X is installed between them. Normally U is held in its lowest possible position by the spring M which presses on V. If the air in A is compressed the spring M is also compressed and an upward stream of oil rises from B1 until it strikes the sliding disk X.

The disk is raised, thus finally lifting the collar V and plunger of the pump, and making a tight joint with the part V1 and a passage from chamber B1 through the space closed by ball valve T and up through the plunger into A1. When the spring M extends against the disk X is forced down until it strikes W and forces the plunger to its lowest possible position. The oil thereby forced down passes up by the check valve Y and returns into the space A1.

An important point in the use of this shock-absorber is the necessity of always keeping it full of oil up to a certain level; the latter is determined, in filling the device, by means of a



Section and Exterior views of Westinghouse Air Spring

float. The proper initial air pressure is found in the following manner: The oil being filled in up to the correct height, air is pumped in through the check valve N until, with the car and passengers resting on the air spring, the Cylinder C1 projects about two inches above the casing C2. Then the cap M is screwed onto the valve and the device remains intact till the weight of the car has to be adjusted by a lasting change in the number of passengers. The cylinder should always project two inches from the casing to give a smooth and easy riding effect over all sorts of roads and pavements.

## GERMANS LEARN WHY TIRES FAIL

The Continental Works, in Hanover, Germany, have made numerous experiments to determine why pneumatic tires give out, and the results of their investigations are as follows:

### Defective Covers

- 17.3% by reason of running slow with too little air in the tire.
- 3.5% because of rusty and battered felloes.
- 1.5% by cutting of the cover strip through insufficient screwing up of the wing nut or screw, so that the cover can slip round the felloes.
- 1.8% on account of too sudden braking, rubbing the tire through in some place.
- 0.2% by contact with oil and other fatty substances, which, as is well known, will spoil rubber.

24.3%

Of the other 75.7 per cent. we have as follows:

- 29.4% were punctured by nails, stones and pieces of iron.
- 4.3% showed only slight injuries and cuts, which were readily mended.
- 4.9% had severe injuries ruining the upper linen inlay.

38.6%

The last 37.1 per cent. of tires were simply worn out or rendered useless by normal causes.

The entire number thereof may be considered as having failed for the following reasons:

- 24.3% by fault of the owner of the car.
- 38.6% from abnormal causes.
- 37.1% from normal wear and tear.

100%

This shows about one-quarter of the entire number of failures of tire covers are due to the fault of the owner or his chauffeur.

In regard to the inner tube, the following has been shown to be the cause:

### Defective Tubes

- 13.0% crushed in assembling.
- 7.2% rubbed through by improper assembling, or by sand or small stones in the tire.
- 9.5% by faults in assembling.
- 6.8% from driving without sufficiently filling with air.
- 5.8% by injury from rusty and deformed felloes.
- 4 % by injury from defective valves and improper handling of the valve.

56.3% from fault of owner or his employee.

The other 43.7 per cent. defects were owing to normal and external conditions.

## BIG ADDITION TO COLE PLANT

On July 17 workmen began the construction of a \$100,000 wing to the Cole Motor Car Company's plant at Indianapolis, Ind.

## C. W. JAMIESON DEAD

The entire plant of the Abbott Motor Co., Detroit, was closed down Tuesday afternoon, July 9, out of respect to Chas. W. Jamieson, president of the company, who died July 6, at his home at Warren, Pa. While he had been confined to his bed since last December, strong hope was entertained for his ultimate recovery. Mr. Jamieson became a heavy stockholder in the Abbott Company upon its reorganization two years ago at which time he was made president. He was also president of the First National Bank at Warren, besides being one of the largest independent oil refiners in the country, and was heavily interested in several important manufacturing and mining companies.

## IMPERIAL AUTO CO. BUYS BIG FACTORY

The Imperial Automobile Co., Jackson, Mich., has purchased the Gro. T. Smith building recently used by the General Motors Co. for the manufacture of Buick motor trucks.

The deal includes machinery and equipment and seven acres of land. There are 250,000 square feet of floor space. The building has a frontage of 400 feet; the south wing is 800 feet long, and the north wing 700 and the center wing 400 feet long. It gives the firm the largest plant owned by an individual corporation in the United States.

## FORD BUYS SITE FOR MINNEAPOLIS BRANCH

Purchase of an acre of ground at Fifth avenue North and Fifth street, Minneapolis, Minn., by the Ford Motor Company, of Detroit, as a site for an assembling plant and warehouse was completed at a cost of \$51,500. Three lots were bought. The Ford Company will erect a building to cost between \$200,000 and \$300,000. This will make Minneapolis one of the nine assembling and distributing plants for the firm in the United States.

## TO CONVERT WAGON OR BUGGY INTO MOTOR VEHICLE

A company has been organized at Indianapolis to manufacture a tractor invented by Charles H. Martin which may be attached to any horse-drawn wagon or buggy, thus converting it into a motor vehicle. This company, known as the Martin Tractor Company, has been incorporated with an authorized capitalization of \$350,000. Those interested in it being C. H. Martin, Hugh R. Richards, Frank B. Davenport, Edward D. Moon and George D. Thornton.

## NEW TRUCK COMPANY AT PERU, IND.

A new auto truck company is being organized in Peru, Ind., with Will H. Brown, president of the Mais Motor Truck Company, of Indianapolis, at the head of it. Fifty-one per cent. of the stock, the total of which amounts to \$100,000, has been subscribed. Buildings have been provided for, and the company will soon be manufacturing trucks over patterns designed by Mr. Brown.

## WILLYS NOW CONTROLS GARFORD PLANT

John N. Willys, of the Willys-Overland Company, of Toledo, has purchased a controlling interest in the Garford Auto Company, at Elyria, O. The Garford Company is capitalized at \$2,000,000. Mr. Garford retains an interest in the company and will remain as president.

## FORD ASSEMBLING PLANT FOR MEMPHIS

An assembling and distribution plant, to be the largest of its kind in the South, will be built in Memphis, Tenn., by the Ford Motor Company, to cost over \$150,000, and will be located at Union avenue and the Southern Railway. The building will be six stories.

## SWELL SALES ROOMS

The Pierce-Arrow car people paid \$19,000 for a site in St. Louis at the southeast corner of Washington boulevard and Euclid avenue, where one of the handsomest salesrooms in the city will be built for the concern. It will occupy 87 x 150 feet.

## WILL MAKE AUTO ACCESSORIES

The Todd Manufacturing Company, 820 Mary place, Minneapolis, Minn., has opened a factory for the manufacture of radiators, hoods, fenders, drip pans and other automobile specialties. The company also will do a general repair business.

# VEHICLE STATISTICS

As the Thirteenth Census nears completion we are securing interesting data for vehicle builders. We have from time to time given the facts concerning separate states as we could get them, but this month we furnish a group of states. We hope they will prove of interest.

## Pennsylvania

The following table shows the number and value of the several products of this industry for 1909, 1904, and 1899:

Product	1909	1904	1899
Total value .....	\$12,748,383	\$11,493,128	\$10,455,016
Carriages, family and pleasure:			
Number .....	23,395	33,467	41,400
Value .....	\$1,738,125	\$2,355,043	\$2,816,780
Wagons:			
Number .....	33,634	35,395	27,138
Value .....	\$2,996,485	\$2,839,372	\$2,161,435
Business—			
Number .....	21,414	21,722	(*)
Value .....	\$2,143,007	(*)	(*)
Farm—			
Number .....	11,964	13,321	(*)
Value .....	\$766,499	(*)	(*)
Government, municipal, etc.—			
Number .....	256	352	(*)
Value .....	\$86,979	(*)	(*)
Public conveyances:			
Number .....	432	333	141
Value .....	\$133,811	\$117,093	\$27,645
Sleighs and sleds:			
Number .....	3,210	5,551	5,509
Value .....	\$90,619	\$150,461	\$118,449
All other products, including parts and repair work....	\$7,789,343	\$6,031,159	\$5,330,707

\*Not reported.

The increase of \$2,293,367 shown in the total value of products for the decade is more than covered by the advance in the one item "All other products, including parts and repair work," the gain in the value of which was \$2,458,636. Wagons and public conveyances combined showed an increase in value of \$941,216. A decided decrease is shown in the number and value of family and pleasure carriages, and sleighs and sleds.

## Indiana

The following statement shows the number and value of the different kinds of carriages and wagons manufactured in Indiana in 1909, 1904, and 1899:

Product	1909	1904	1899
Total value .....	\$21,655,440	\$19,258,861	\$15,810,805
Carriages (family and pleasure):			
Number .....	177,194	178,962	141,734
Value .....	\$10,150,893	\$9,694,829	\$6,959,897
Wagons:			
Number .....	87,844	92,893	94,224
Value .....	\$5,444,456	\$4,288,664	\$4,359,603
Business—			
Number .....	15,617	12,554	(*)
Value .....	\$1,408,543	(*)	(*)
Farm—			
Number .....	71,530	78,340	(*)
Value .....	\$3,952,786	(*)	(*)
Government, municipal, etc.—			
Number .....	697	1,999	(*)
Value .....	\$83,127	(*)	(*)
Public conveyances (cabs, hacks, hansoms, hotel coaches, omnibuses, etc.):			
Number .....	52	63	64
Value .....	\$9,635	\$11,180	\$13,605
Sleighs and Sleds:			
Number .....	1,101	1,378	3,834
Value .....	\$20,483	\$27,149	\$52,554

## Automobiles:†

Number .....	225	92	.....
Value .....	\$119,525	\$117,516	.....
All other products, including parts and repair work....	\$5,910,448	\$5,119,523	\$4,425,146

\*Not reported separately.

†Automobiles manufactured in establishments devoted primarily to the manufacture of carriages and wagons.

Every class of carriages and wagons reported, with the exception of business wagons, shows a decrease in number from 1904 to 1909. From 1904 to 1909 the number of family and pleasure carriages decreased, but their value increased. Wagons, which constituted the second largest class both in 1909 and in 1904, decreased 5.4 per cent. in number but increased 26.9 per cent. in value during the five-year period.

## Missouri

The value of the products of the carriage and wagon industry in Missouri has increased from \$6,446,006 in 1899 to \$7,678,429 in 1904 and \$8,468,856 in 1909. The following table shows the number and value of the different kinds of vehicles manufactured in the three census years.

Family and pleasure carriages showed the greatest value of products in 1899 and 1909, and formed 43.4 per cent. and 46.2 per cent., respectively, of the total for the industry. From 1899 to 1909 the number of family and pleasure carriages reported increased 84.5 per cent. and their value 39.9 per cent. During the same period the number of wagons decreased 18.2 per cent. with but little change in their total value.

Product	1909	1904	1899
Total value .....	\$8,468,856	\$7,678,429	\$6,446,006
Carriages (family and pleasure):			
Number .....	97,444	74,650	52,823
Value .....	\$3,913,969	\$3,826,342	\$2,797,118
Wagons:			
Number .....	20,140	25,281	24,621
Value .....	\$1,388,699	\$1,507,225	\$1,392,102
Business—			
Number .....	2,085	2,677	(*)
Value .....	\$364,366	(*)	(*)
Farm—			
Number .....	18,047	22,485	(*)
Value .....	\$1,021,853	(*)	(*)
Government, municipal, etc.—			
Number .....	8	119	(*)
Value .....	\$2,480	(*)	(*)
Public conveyances (cabs, hacks, hansoms, hotel coaches, omnibuses, etc.)—			
Number .....	98	58	88
Value .....	\$48,558	\$4,445	\$24,550
Sleighs and sleds:			
Number .....	53	6	170
Value .....	\$783	\$153	\$3,204
All other products, including parts and repair work....	\$3,116,847	\$2,340,264	\$2,229,032

\*Figures not available.

## Ohio

The following table shows the number and value of the various products of the carriage and wagon industry in Ohio for 1909, 1904, and 1899:

Product	1909	1904	1899
Total value .....	\$21,949,459	\$24,002,500	\$22,803,197
Carriages (family and pleasure):			
Number .....	135,877	199,428	213,692
Value .....	\$8,126,285	\$11,373,346	\$11,257,362
Wagons:			
Number .....	28,882	40,905	44,315
Value .....	\$2,733,606	\$2,703,566	\$2,556,063

Business—			
Number .....	12,187	7,988	.....
Value .....	\$1,507,161	.....	.....
Farm—			
Number .....	16,549	52,645	.....
Value .....	\$952,252	.....	.....
Government, municipal, etc.—			
Number .....	146	272	.....
Value .....	\$274,193	.....	.....
Public conveyances:			
Number .....	657	217	41
Value .....	\$206,458	\$107,141	\$16,000
Sleighs and sleds:			
Number .....	7,589	8,479	3,555
Value .....	\$78,542	\$52,166	\$25,761

All other products, including parts and repair work....\$10,804,568 \$9,766,281 \$8,948,011  
Ohio still ranks first among the several states in the production of carriages and wagons, notwithstanding a decrease in the value of products from 1904 to 1909 of \$2,053,041. Inspection of the figures for the different classes shows that all the decrease in value results from the decreased production of family and pleasure carriages. In 1899, 213,692 carriages were produced, with a value of \$11,257,362, and they contributed 49.4 per cent. of the total value of the products of the industry, but in 1909 only 135,877 carriages were produced, with a value of \$8,126,285, and they contributed only 37 per cent. of the total value of products of the industry.

### MOVEMENTS OF PARRY SALES FORCE

Wm. McMorrow, who formerly traveled Florida and Georgia for Parry Mfg. Company, has been reassigned to that territory. Having been in another line for the past year, he says it feels like getting back home again to be handling buggies.

E. H. Habig, sales manager, spent a week in July in the northwest on business.

A. B. Gaugh, who recently accepted a position as special traveler, is making a three weeks' trip through northeastern Arkansas.

Geo. B. Bandy has been retained as general salesman in Texas, Louisiana and that part of Oklahoma and Arkansas lying on or south of the Rock Island Railroad. The trade in northern Oklahoma and Arkansas will be handled by other salesmen direct from the home office.

### A GREAT TIME IN FRANCE

#### Reunion of the Coach and Automobile Builders of France, Belgium and Holland

The days of the third to fifth of June were signalized in Paris by a reunion of the coach and automobile builders of France, Belgium and Holland, with a few invited guests from England.

La Carrosserie Francaise has done full honor and credit to the occasion by an extended and spirited account of the doings.

The invitation was from the French Syndical Chamber to the Chambers of Belgium and Holland.

Here is the list of those present, excluding some twenty ladies in the party:

France—Adolphi, Aigner, Alin-Liautard, Audineau, Auster, Avoiron, Back, Baffoy, Bailjuene, Bellard, Belvallette, Berton-Labourdette, Besnard, Bernin, H. Binder, Bize, Bleriot, Boisse, Boyriven-Cret, Bourcy, R. Breteau, Bretonniere, Bruneval, Buat, Champert, Charpentier, Closse, Cottenet, Coulon d'Etchevery, Cognat, Dubourg, Degout, Delagrange, Delasalle, Deshayes, Drescher, Driguot, Drouhin, Ducrot, Dufau, Dupont, Etabl. Beuzelin, Faurax, Felber, Forster, Gallerand, Gall, Genth, E. Girard, Goyard, Griffault, Grummer, Hartog, Hague-nauer, Hanzer, Herrenschmidt, Herold, Hoffmann, Hollande, Jallerat, Joly, G. Kellner, P. Kellner, G. Laborey, H. Labourdette, Leffroy, Lelorieux, Letourneur & Marchand, Loubiere, Marrel, Massion, Martin, Merville-Morgan, Montel, Meyer-Hurand, Nauton & De Marsac, Nizard, Ottin, Pechard,

Penin, Potron, Cie de La Prevoyance, Remy, Retif, Riegel, Rodriques, Rheims & Auscher, Ronsin, Reydelet, Sirieux, Sydney Will, Cie L'Urbaine & la Seine, Vanwooren, Van Brabant, Vuitton, Vermot, Weller, Willoëq.

Belgium—Barbier (Jules), Bousson, P. Crabbe, Delievre, M. & Mme. De Meuse, MM. C. De Pauw, L. D'Ieteren, E. D'Ieteren, G. Driessens, L. Driessens, A. Gamette, G. Gamette, Gilliaux, Lorenz, Marechal, Marouse, Masui, J. Meuris, F. Navez, V. Snutsel, Stas de Richelle, M. and Mme. A. Van den Plas, M. and Mme. G. Van den Plas, MM. Willy Van den Plas, H. Van den Plas, Billen, P. L. Bozon, V. Charlet, Courtmans, De Middelaer, Fd. De Pauw, Derwa, Haussens-Hap., Herman, Hoffman, Kappeler, Kuper, M. and Mme. Lacroix, MM. Nopert, Peeters, Pelgrims, Prud'homme, Van der Hulst, Wanson, Willocq-Bottin, M. le Comte de Villers, Craninckx, Leenaerts, Van Cauwenberg.

Holland—Pennock, Van Ryswyk fils, Van Bakel.

England—Thrupp, Goodmann, Mulliner, Maythorn.

Mr. Paul Kellner was the organizer, and was largely responsible for the splendid success of the meeting.

The reception was in the Hotel de la rue Desrenaudes, and the president of the Chamber, M. Cottenet, made the address of welcome.

Poetry by M. Leffroy followed, and the response on behalf of the visitors was made by M. Willy Van Den Plas, of Belgium. Mr. Lawton-Goodmann spoke for the Britishers in English.

Autobuses were taken to the works of Kellner & Son at Billancourt, also at Avenue Malakoff. Then to the Hermitage Restaurant in the Bois for breakfast.

The Renault shops were visited, then the Billancourt shops of Kellner & Son (champagne and cigars; tea for the ladies, in a nearby place).

In the evening the Belgian Chamber invited all to a banquet Quai d'Orsay, and we cannot refrain from reproducing the menu because it must have been a most sumptuous as well as delightful dinner. Here it is:

#### Menu

Mock-Turtle a l'Australienne—Consomme Baratsky

Barquettes Palais d'Orsay

Supreme de sole a l'Ostendaise

Baron d'agneau Monte-Carlo

Poularde a la Brabant

Granite Albert Ier

Caneton de Rouen sauce Porto

Salade Bagatelle

Ecrevisses de la Meuse au vin de Chablis

Asperges d'Argenteuil sauce mousseline

Timbales de fruits a la Parisienne

Parfait glace Opera

Gateau Bruxellois

Desserts

#### Vins

Madere—Medoc et Graves en carafes

Haut-Sauternes

Pontet-Canet 1895—Corton Clos du Roi 1899

Champagnes Saint-Marceaux

Et Pommery Drapeau Americain frappe

Cafe et Liqueurs

Toasts by Messrs. Van den Plas, Cattenet, Thrupp and many more were a part of the enjoyment.

The following day the shops of Rothschild at Levallois were inspected. The owners of the establishment MM. Rheims & Auscher, were the hosts. M. Rheims being absent due to illness. Then the journey was resumed to intermediate places, finally ending at Versailles, where a breakfast (dejeuner) was given by the French Chamber of Paris and the Departments. Unfortunately the weather was not good this day, so a visit to the Aerodrom de Buc was abandoned.

The last day visits of inspection were made to the shops of Panhard & Levassor, where a beautiful souvenir catalogue was distributed, then to the Bois de Vincennes, where the

Yellow Door Restaurant had a most delightful repast ready at which President Cottenet was the host.

This afternoon a visit to Lemoine at Ivory-Port was on the programme, then more refreshments, then to the Palais du Luxembourg (the French Houses of Congress), and in the evening another grand banquet, then the poet, M. Leffrey, read some verses of farewell.

The function ended with what we would call vaudeville, but was named Soiree Artistique, a much prettier phrase.

We cannot refrain from again inserting the menu of this last feast. (We only wish we might have aided in its enjoyment just to show that the "high cost of living" cut no figure on this splendid occasion).

#### Menu

Creme de Homard  
 Consomme Andalouse  
 Rissoles Lucullus  
 Caisses Montglas  
 Truites Saumonees glacees a l'Aurore  
 Canetons nouveaux Bigarde  
 Siles de pre-sale Maintenon  
 Granite a la Cerise  
 Mousses au Kirsch  
 Paonneaux rotis truffes  
 Jambons d'York glaces Alsacienne  
 Salade  
 Asperges en Branches sauce Mousseline  
 Glaces Astarte  
 Condes  
 Fours et Fruits glaces  
 Barsac en carafes—Saint-Emilion en carafes  
 Champagne frappe sur table  
 Chateau Filhot 1904—Corton 1897  
 Røederer frappe  
 Cafe—Liquers

Thus concluded a season of feasting, friendship, and charm that will not be forgotten soon, we are sure.

Hail! to our friends.

### CONCERNS IN BIG MERGER

Announcement was made July 18 of the companies in the merger formed by the Emerson-Brantingham Company, of Rockford, Ill., under a capitalization of \$50,000,000. They are the Emerson-Brantingham Company and the Emerson Carriage Company, Rockford; Emerson-Newton Implement Company, Minneapolis; Emerson-Newton Company, Kansas City; Emerson-Brantingham Plow Company, Dallas; Emerson-Brantingham Implement Company, Spokane; Gas Traction Company, Minneapolis; La Crosse Hay Tool Company, Chicago Heights.

A grain drill company, a wagon manufacturing company, and a thresher company, said to be in each case a big concern, are to come into the merger soon.

Application for permission to increase the capital stock of the Emerson-Brantingham Company from \$6,000,000 to \$50,000,000 was made and cash filing fee of \$47,000 was paid the state.

Charles S. Brantingham will be president; Fred Glover, vice-president; J. W. Maclachlin, secretary and treasurer, and E. P. Lathrop, general counsel.

The sales force of the companies to be merged numbers 300 men and it is the intention of Mr. Brantingham to assemble as strong a sales force as possible as the success of the business depends on the sales.

J. D. White, sales manager of the Emerson-Brantingham Company, will continue in that capacity, while F. D. Moody, who has been with the company in the west, will direct the sales of the varied lines from the head office.

A. T. Jackson will be sales manager of the vehicles and wagons and when the deal for the thresher is closed, a sales manager will be named for this branch. In addition to these there will be a sales manager for the foreign trade—as with

a complete line the company expects to make a greater bid for the foreign trade and thus early has had assurance of some good accounts in South America.

Mr. McCurdy, of Minneapolis, an experienced newspaper man, will move to Rockford as advertising man for the company and will look after the publicity end of the business.

The Emerson-Brantingham Company has also purchased the Geiser Manufacturing Company, of Waynesboro, Pa., manufacturers of the Peerless line of engines and threshers. Also Reeves & Co., Columbus, Ind., manufacturers of double cylinder and cross compound steam thresher and plowing engines, etc.

### ASSOCIATION COLLECTING FREIGHT CLAIMS

The Western Retail Implement and Vehicle Dealers' Association now has an auditing and claim bureau in charge of a competent traffic man. It has been in operation a little more than a month, but already has located and filed claims for overcharges due thirty-five members. In eight cases the overcharges have been collected. The total amount found to be due the thirty-five claimants on the bills above mentioned is \$335.86.

In some cases the claims are made up of a number of small items, which the average dealer would consider too small to warrant filing a claim. But in the aggregate the amounts are well worth collecting. This shows the value of a claim bureau in charge of one whose business it is to file claims, no matter how small the amounts.

### ROCHESTER CARRIAGE COMPANY

The Rochester Carriage Co., an outgrowth of the Sullivan Bros.' carriage manufacturing business, of Rochester, N. Y., will increase its capital stock to \$200,000.

The Rochester Carriage Company owns its completely appointed factory on East avenue, including five acres of land, and builds a great variety of buggies, buckboards, runabouts and sleighs, all particularly adapted to the eastern market by reason of their design. Sales can be more than doubled with increased capital.

It also owns the Sullivan Motor Car Company, manufacturers of motor trucks for commercial use, of a carrying capacity of 1,000 to 1,500 pounds each. The output of this branch of the business is sold far ahead and the concern has been obliged to turn down orders for the lack of increased working capital.

More than half the stock has already been subscribed for.

### LEGAL BATTLE OVER DELIVERY OF MAILS

The J. I. Case Threshing Machine Company, manufacturing Case cars, and the J. I. Case Company, the sales end of the J. I. Case Plow Works, of Racine, Wis., are engaged in a legal battle over the right to the delivery of mail. The threshing machine company has for many years received all mail addressed J. I. Case Company, and when the plow works recently organized a subsidiary under the style of J. I. Case Company the matter was presented to the postoffice department which ruled that the delivery of all Case mail to the threshing machine and motor car company was proper and should be continued. The matter is now in the Circuit Court at Racine.

### VEHICLE MANUFACTURER ENDOWS Y. M. C. A.

Charles Eckhart, prominent vehicle and automobile manufacturer of Auburn, Ind., has announced that he and his son will donate \$40,000 for a new Y. M. C. A. building for Auburn. Mr. Eckhart has established quite a reputation as a philanthropist, as he recently gave his home city a public library and also a playground for children.



## ALL ABOUT SYNTHETIC RUBBER

There are certain things which for years have haunted the dreams of inventors as very desirable subjects for work and research, and among these one of the most prominent is the production of rubber in the laboratory.

In the attempts to produce rubber or something which would serve as a perfect substitute various more or less useful substances have been obtained.

Now, however, we are forced to pay serious attention to the latest news on this subject because it is announced by Prof. W. H. Perkin, of the Manchester University, whose scientific reputation in the field of organic chemistry is very high. The results he has announced were obtained in collaboration with such well known men as Ramsay and Fernbach.

Coming as rubber does from various different plants, it is not in the crude form a definite chemical compound but a mixture of a great number of different substances. The commercial article is found to contain water, sand, pieces of various plants, fragments of wood, etc. Much of the impurities of this sort can be removed by washing with water; but this also dissolves out certain sugars which are associated naturally with rubber and are not merely accidental impurities. But even after the washing process the rubber, though technically pure, is by no means chemically pure, but contains other substances such as albumen, essential oils, sugar, mineral matter and water. In order to obtain chemically pure rubber it is necessary to purify the technically pure material with various solvents, and when this has been done and the product is analyzed it is found to have the following approximate composition:

Carbon .....	88 per cent.
Hydrogen .....	12 per cent.

It need scarcely be said that the rubber of commerce is not a pure substance of this kind.

The purest rubber that can be obtained is a nearly colorless substance slightly lighter than water.

Rubber is not soluble in water, but it absorbs a large quantity after being immersed for a long time and swells considerably. Although rubber is so valuable as a waterproofing material it is not perfectly impervious to water, as might be expected from its property of absorbing water.

It is generally customary to speak of rubber as a very elastic substance, although the expression is somewhat ambiguous. In considering elasticity in the scientific or engineering sense it involves a consideration of the force applied to produce a certain deformation of the substance. Thus steel has a high coefficient of elasticity compared to rubber. When, however, we speak of the elasticity of rubber we mean that a relatively enormous deformation may be produced, and yet the rubber will return to its original form when the force producing the deformation is removed.

From a practical point of view the most important property of rubber is the peculiar effect obtained by heating it with sulphur, the process being known as vulcanization. The fact that sulphur and rubber could be mixed with beneficial results was observed as early as 1832 by Luedersdorf and by an American named Hayward, but it was Goodyear who first definitely demonstrated the value of sulphur in keeping the elastic properties of rubber constant over a wide range of temperature.

Many years ago Tilden produced rubber from a chemical substance called isoprene. By analysis it is shown that a great many organic compounds have identically the same composition if we simply consider the relative proportions of the constituents. Oil of turpentine, a compound obtained from ordinary turpentine, has just the same proportions of hydrogen and carbon. From oil of turpentine the chemical compound isoprene

may be prepared, and this on analysis again shows the same relative quantities of hydrogen and carbon. Furthermore, if rubber is heated under proper conditions it yields isoprene. Finally if isoprene is brought into contact with hydrochloric acid at ordinary temperatures for a long period rubber is formed.

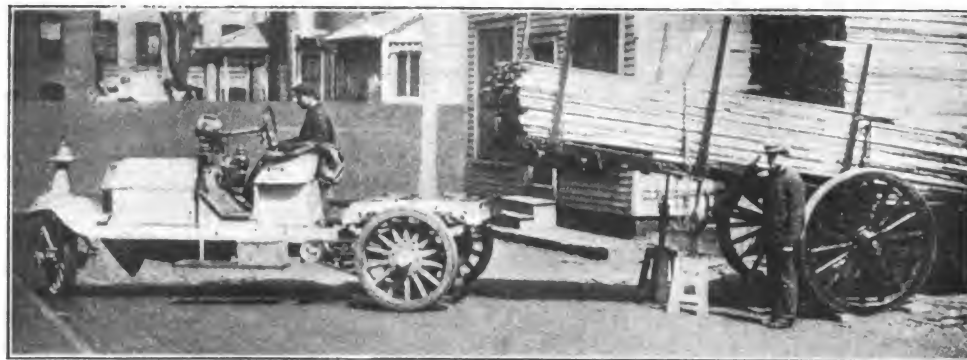
This is a good example of polymerism, for the only way in which we can explain the extraordinary difference in the physical properties of rubber and the highly volatile liquid isoprene is to suppose a change in the molecular structure of the two substances.

Tilden published the results of his chemical investigations about thirty years ago, so that there is nothing new in the production of rubber from isoprene. Indeed, the "discovery" has been remade a good many times by people whose knowledge of organic chemistry was somewhat incomplete. Commercially it has not appeared interesting because the original raw materials, such as turpentine, and the manufacturing processes would make the rubber thus produced far too expensive to compete with that obtained from the latex of the rubber plantations. The work of Perkin and his collaborators, however, is different, for they do not start with turpentine as a raw material from which isoprene is to be prepared. Instead of that, fusel oil is produced by a process which is said to be relatively cheap, and from that is separated a compound called isobutyl alcohol, this in turn being used to prepare isoprene. Then instead of using the hydrochloric acid reaction sodium is the reagent employed for the polymerization of the isoprene to rubber.

It would be impossible to form an opinion with the data now obtainable as to the future of this extremely interesting research. So far as can be learned the process has not yet been worked on a sufficiently large commercial scale to determine what the rubber so made will cost, and calculations based on any other grounds are very apt to be misleading.

## TRACTOR THAT DRAWS WAGONS

A real "mechanical horse" has been placed on the market. It is a tractor that is easily hitched to any horse-drawn vehicle, just as a team of horses may be, and combines all the advantages of the horse with those of the auto truck at an exceed-



ingly low price. The outfit comprises a steel bar and coupler and sprocket wheels designed to be attached to the wheels and tongue of the wagon. There is only one wheel on the "horse" and that is at the front, the most of the support for the tractor depending upon the front wagon wheels by which it is driven. The engine, mounted under the front hood as in an automobile, is of forty or fifty horsepower, and drives the wagon at a speed of from eight to thirty miles an hour, the latter speed only being used when it is designed for fire truck service. The front wheel is used to steer by and it allows a turn being made at an angle of eighty-five degrees, thus giving remarkable turning ability in narrow streets.

One of the greatest advantages of the "mechanical horse" is the fact that it may be kept constantly at work while unloading or loading is going on.

# Trade News From Near and Far

## BUSINESS CHANGES

E. E. Clarke, Spirit Lake, Ia., sold his wagon works to T. A. Burns, Jr.

D. J. Hanley, of Newhall, Ia., has sold out his stock of buggies, etc., in that place.

Albert Dolezer has purchased the vehicle business of George Burke, in Mancelona, Mich.

Aug. Grotham has purchased the stock of vehicles, etc., of George Taylor, in Grant, Neb.

McGrail & Spender have purchased the stock of vehicles, etc., of May & Scott, in Lexington, Neb.

P. H. Hybskmann has disposed of his stock of vehicles in Vermillion, Kas., to Chas. S. Schafer.

Chas. Bierce has traded his stock of hardware and vehicles in Riverside, Ia., to Waldo & Waldo.

Millerin & Buchanan have disposed of their vehicle business in Roswell, N. M., to Scott & Tracy.

R. W. Fisk has disposed of his implement and vehicle business in Burr, Neb., to John Brennan.

Lewis Clark has purchased the vehicle and automobile business of N. B. Costello, in Blanchard, Ia.

H. L. Ansart has succeeded to the vehicle business of the Harris-Ansart Co., in North Yakima, Wash.

Creston Implement Co., Creston, Ia., sold its implement and vehicle business to O. J. Callagy and Clint Henry.

J. C. McIlrath, of Grinnell, Ia., has purchased the vehicle and implement business of Duffus & Sons, in Montezuma, Ia.

The Fisher Furniture & Hardware Co., of O'Neill, Neb., proposes to discontinue handling vehicles and implements.

Jamison Brothers have disposed of their hardware business in Valparaiso, Neb., but continue in the vehicle and implement line.

George Lloyd has purchased the interest of Harry Andrew in the vehicle and hardware business of Lloyd & Andrew, in Grand River, Ia.

H. L. Gilbert and others have purchased the vehicle and implement business of Davis, Campbell & McCoy, and Samuel Heinlein will be manager of the store in Marshall, Mo.

## NEW FIRMS AND INCORPORATIONS

J. T. Staska has just opened a new stock of vehicles in Craig, Neb.

John W. Cook is establishing a new buggy and hardware store in New Bloomfield, Mo.

O. T. Danielson has opened a new stock of vehicles and implements in Bronson, Minn.

Goddard & Caraway have opened a new stock of vehicles and hardware in Kenefick, Okla.

R. W. Augustine, of Doniphan, has just opened a new stock of buggies, etc., in Hanson, Neb.

Samuel Hakonson is about to engage in the vehicle and implement business in Wheaton, Minn.

Frank Eller and son Homer have opened up a wagon factory at Houston, Tex., under the name of Eller & Son.

Albert Buegler, of Sauk Rapids, Minn., proposes to erect a building and engage in the vehicle and implement business.

The Wallace Bros. Co. has been incorporated in San Antonio, Tex., with a capital of \$10,000, to handle wagons, buggies and implements.

B. B. Reynolds, of Big Rapids, has purchased a two-story building at Middleville, Mich., and will open up a wagon and blacksmithing business, using the second story for a residence for himself.

## IMPROVEMENTS AND EXTENSIONS

The Seabury-Carson Co. is erecting a new vehicle warehouse in Mondamin, Ia.

Swanson & Hedland, of Cresco, Neb., are about to begin the E. C. Polson is about to erect a building for his harness and buggy business in Milo, Ia.

erection of a new vehicle warehouse.

F. B. Dell, of Hixton, Wis., contemplates erecting a new building for his stock of vehicles, etc.

The Hardy Buggy Co. will rebuild its plant in Paducah, Ky., which was recently destroyed by fire.

H. A. Boyer, a vehicle dealer of Fairbault, Minn., has moved to new quarters at Central avenue and Second street.

The Newton Hardware Company, Roundup, Mont., will construct a warehouse in the rear of its store, to be used to house its surplus stock of machinery, farm implements and wagons.

The J. J. McAlester Mercantile Company, of North McAlester, Okla., has completed a new brick store building to be used for the new department which is being installed for buggies, wagons, farm implements, etc.

## NEWS OF THE AUTO TRADE

The Oakland Automobile Co. has engaged in business in Oakland, Neb.

A new garage is about to be constructed in Atlanta, Ga., for the Oakland Motor Co.

The Kissel Kar Co. has begun the erection of an addition to its plant in Hartford, Wis.

The Sandine Auto Co. has purchased the business of Donner & Stutzman, in Aurora, Neb.

J. Ummel has purchased the automobile business of Henry Hoelscher, in Fremont, Neb.

Hugh Cecil and J. E. Warga will open a new automobile business in Plattsmouth, Neb.

The Corinth Auto Co. has been incorporated in Corinth, Miss., with a capital stock of \$10,000.

Stover & Keitaley have sold out their automobile business in Syracuse, Neb., to R. A. Duff.

C. G. Anderson has disposed of his automobile business in Valentine, Neb., to F. A. Cumbow.

The Keeton Motor Co., of Detroit, Mich., has increased its capital stock from \$10,000 to \$300,000.

Poppen & Stallman have purchased the automobile business of P. Lochmiller, in Petersburg, Neb.

Mr. Ringsrud has succeeded to the automobile business of Ringsrud & Curry, in Elk Point, Neb.

The automobile houses of L. M. Bagley and Frank Viers, in Superior, Neb., have been consolidated.

The R. F. Flick Automobile Co. has been incorporated with a capital stock of \$10,000, in Cuero, Tex.

Bandin Bros., of Marquette, Neb., have decided to engage in the automobile business in Aurora, Neb.

The Hager Motor Car Co. has been incorporated in Nashville, Tenn., with a capital stock of \$5,000.

The Flatonina Automobile Co. has been incorporated in Flatonina, Tex., with a capital stock of \$5,000.

The Cumings Motor Co. has been incorporated in Grand Island, Neb., with a capital stock of \$10,000.

The New Primo Motor Works have been incorporated in Atlanta, Ga., with a capital stock of \$100,000.

The Little Automobile Co. has been incorporated in Spartansburg, S. C., with a capital stock of \$2,000.

The Southwestern Motor Car Distributing Association has been incorporated in Memphis, Tenn., with a capital of \$50,000.

The Grand Island Motor Company has been incorporated in Grand Island, Neb., and will erect a factory building 66 x 132.

### BUSINESS TROUBLES

W. C. Christian was appointed receiver for the Newark (O.) Gearwood Company, on July 24, giving bond for \$30,000. The business of manufacturing wagon and buggy gears will be continued.

Henry L. Borden on July 16 was appointed receiver for L. H. Burks & Son, Inc., Houston, Tex., against whom a petition in bankruptcy had been filed. The company handled carriages, implements and automobiles.

Judge Brown, of the United States District Court of Massachusetts, has given his decision in the case brought against the Fisk Rubber Company, of Chicopee, by the De Laski & Thropp Circular Woven Tire Company, in which he dismissed the bill brought by the latter company.

An involuntary petition in bankruptcy was filed in federal court July 15 against the De Table Motors Company, of Anderson, Ind. The petition that the automobile company be adjudged bankrupt was filed by the Class Journal Company, of New York, a creditor to the extent of \$4,772.42; the St. Louis Screw Company, which alleged indebtedness of \$259.46, and the Michelin Tire Company, which has a claim for \$444.44. It is alleged that the company, while insolvent has been preferring certain creditors.

Franklin Vonnegut has been appointed receiver for the Mais Motor Truck Company, of Indianapolis, Ind. It is probable that steps directed toward the sale of the company's property will be taken within the next 30 days. King is a contracting builder who built a factory building for the company at a cost of \$5,050 on which he has received \$2,800. The suit was brought to protect a mechanics' lien against the property. King alleges the company is in danger of insolvency and has no money with which to conduct its business. He does not charge, however, that the company is insolvent at the present time.

### FIRES

Mohler Bros. Carriage Co., Independence, Mo., suffered a fire loss on July 9.

The stock of vehicles of S. E. Stanberry, in Willmar, Minn., has been destroyed by fire.

The carriage factory of Osborn & Pixley, at Corfu, N. Y., was destroyed by fire on July 18.

The warehouse of Adair & McLain, buggy and wagon dealers, at Mayfield, Ky., was destroyed by fire, July 17. Loss \$7,000.

The wagon and carriage factory of Greene Bros. & Co., 35 Southampton street, Boston, sustained a \$7,000 fire loss on July 10.

The Fremont (Neb.) Carriage Factory suffered a \$50,000 fire loss, July 8. The company will rebuild at once. The insurance was \$40,000.

The new four-story concrete building owned and occupied by the Gregg-William D. Rogers Co., manufacturers of carriages and automobile tops, suffered thousands of dollars damage by fire.

### GOODYEAR COMPANY TO BUILD AT MINNEAPOLIS

The Goodyear Tire & Rubber Company, Akron, Ohio, will erect a northwestern branch building at Twelfth street and Hennepin avenue, Minneapolis, Minn., to cost \$65,000, to be completed by December 1. It will be three stories and basement, of brick and concrete. The showrooms and offices will be on the main floor and the remainder will be for storage and shop.

### 1912 FAIRS AND SHOWS

Alabama (state), Birmingham.....	Oct. 3-12
Arkansas (state), Hot Springs.....	Nov. 11-16
California (state), Sacramento.....	Sept. 14-21
Colorado (state), Pueblo.....	Sept. 16-21
Connecticut (state), Hartford.....	Sept. 2-7
Georgia (state), Macon.....	Oct. 15-25
Idaho (Inter-mountain), Boise.....	Oct. 7-12
Idaho (Lewiston-Clarkston), Lewiston.....	Oct. 7-12
Illinois (state), Springfield.....	Oct. 4-12
Indiana (state), Indianapolis.....	Sept. 2-6
Iowa (state), Des Moines.....	Aug. 22-30
Iowa (interstate), Sioux City.....	Sept. 16-21
Kansas (state), Hutchinson.....	Sept. 14-21
Kansas (state exposition), Topeka.....	Sept. 9-13
Kentucky (state), Louisville.....	Sept. 9-14
Kentucky (Blue Grass), Lexington.....	Aug. 12-17
Louisiana (state), Shreveport.....	Oct. 30-Nov. 6
Maine (eastern), Bangor.....	Aug. 27-30
Maryland (state), Timonium.....	Sept. 3-7
Maryland (interstate), Hagerstown.....	Oct. 15-18
Massachusetts (New England), Worcester.....	Sept. 2-5
Michigan (state), Detroit.....	Sept. 16-21
Michigan (West Mich.), Grand Rapids.....	Sept. 9-13
Minnesota (state), Hamline.....	Sept. 2-7
Missouri (state), Sedalia.....	Sept. 28-Oct. 4
Mississippi (state), Jackson.....	Oct. 21-26
Montana (state), Helena.....	Sept. 23-28
Nebraska (state), Lincoln.....	Sept. 2-6
New Jersey (interstate), Trenton.....	Sept. 30-Oct. 4
New York (state), Syracuse.....	Sept. 9-14
North Carolina (state), Raleigh.....	Oct. 14-19
North Dakota (state), Fargo.....	July 22-27
North Dakota (interstate), Fargo.....	July 22-27
Ohio (state), Columbus.....	Aug. 26-31
Oklahoma (state), Oklahoma.....	Sept. 24-Oct. 5
Oregon (state), Salem.....	Sept. 2-7
Pennsylvania, Allentown.....	Sept. 24-27
Pennsylvania (Grangers' picnic), Williams' Grove.....	Aug. 26-31
South Carolina (state), Columbia.....	Oct. 28-Nov. 1
South Dakota (state), Huron.....	Sept. 9-13
Tennessee (state), Nashville.....	Sept. 16-21
Tennessee (tri-state), Memphis.....	Sept. 23-28
Texas (state), Dallas.....	Oct. 12-27
Utah (state), Salt Lake City.....	Sept. 30-Oct. 5
Vermont (state), White River Junction.....	Sept. 17-20
Virginia (state), Richmond.....	Oct. 7-12
Washington (state), North Yakima.....	Sept. 23-28
Washington (interstate), Spokane.....	Sept. 30-Oct. 6
West Virginia (state), Wheeling.....	Sept. 2-6
Wisconsin (state), Milwaukee.....	Sept. 10-14
Wyoming (state), Douglas.....	Sept. 24-27

#### Implement and Vehicle Shows

Carriage Builders' National Association, Atlantic City, N. J.,	Sept. 23-28
National Implement and Vehicle Show, Peoria, Ill.,	Sept. 27-Oct. 5
Trit-State Vehicle and Implement Dealers' Association Show, Cincinnati, O.....	Oct. 14-19

### LAUDANUM AS "DOPE" FOR GASOLINE

"Doping" gasoline to obtain more power is not a phrase that is unknown—indeed it is a practice which has been attempted almost since automobiles first rolled over the roads. The climax appears to have been reached, however, in the action of the owner of a light runabout who "doped" his gasoline in the true sense of the word with no less a substance than laudanum! An ounce of the drug to five gallons of gasoline was his prescription.

## OBITUARY

**George E. Keller**, who for nearly four years held the position of sales manager of the Studebaker Corporation, of South Bend, Ind., died at his residence in that city on July 2 after an illness of ten months, at the age of 43 years. The executive committee of the Studebaker Corporation was in session at the time his death was announced and immediately adjourned as a mark of respect and the flags of the buildings of the company were placed at half mast. Mr. Keller began his business career at the age of sixteen years with the J. H. Mohler Co., of St. Paul, Minn., working up to the position of secretary and remaining with them until the dissolution of that company. He identified himself with the H. A. Muckle Manufacturing Co. for a period of two years. In 1895 he was employed by the Parry Manufacturing Co., of Indianapolis, Ind., as northwestern manager, afterward taking on the general sales management of that company. In 1908 he became general sales manager of the Studebaker Corporation, remaining in active service until September, 1911. His widow and three children survive.

**Horace Gooch, Sr.**, retired carriage manufacturer, died July 15, at his home in Louisville, Ky., of the infirmities of age. Besides his wife he is survived by three daughters and two sons.

### MABEL PITT SELLS INTEREST IN CARRIAGE FACTORY

Edwin V. Matthews and Richard G. Priebe have purchased the interest of Miss Mabel Pitt in the Pitt-Matthews Carriage and Auto Company, Des Moines, Iowa, and in the future the company will be known as the Matthews Carriage and Auto Company.

### WILL REMAIN IN JACKSON

Instead of going out of the city to establish their business, as was rumored some weeks ago, the Lewis Spring and Axle Company will extend their plant in Jackson, Mich., and will in all probability add the building of auto trucks of nine tons to the already large factory.

### EBERLY & ORRIS BUILD AN ADDITION

The Eberly & Orris Company, makers of wheels and spokes in Mechanicsburg, Pa., has completed an addition to its plant which will be used exclusively to manufacture automobile wheels.

## Wants

Help and situation wanted advertisements, one cent a word; all other advertisements in this department, 5 cents a word; Initials and figures count as words. Minimum price, 30 cents for each advertisement.

#### PATENTS.

**Patents**—H. W. T. Jenner, patent attorney and mechanical expert, 608 F St., Washington, D. C. Established 1883. I make a free examination and report if a patent can be had and exactly what it will cost. Send for circular.

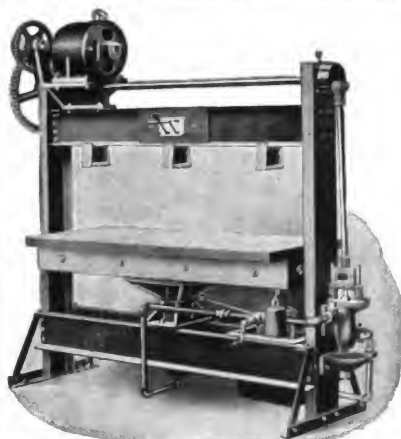
#### HELP WANTED

**Wanted**—An experienced man on auto work, with \$8,000 or \$10,000, to take an interest in the business. Write M. Jess, 534 South street, Springfield, Mo.

**Wanted**—An all around office man, one who has had experience in the office of a vehicle manufacturer; an honest, capable man who is qualified to take charge of the books and general correspondence. Address Box L, care The Hub, 24 Murray street, New York City.

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**Reduce the Cost of Production**  
50 per cent. in your Trimming Department by installing in your factory a Labor-saving, Modern

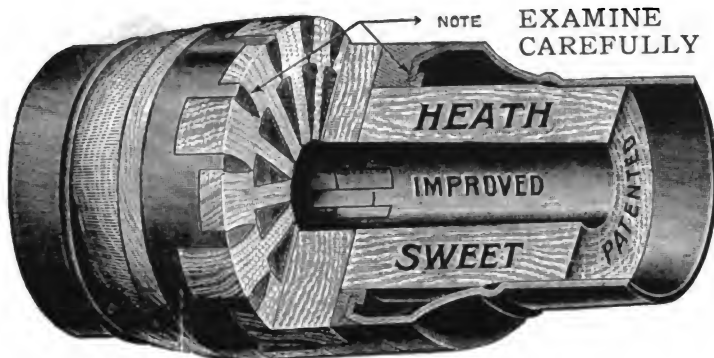
**BUSER-POSTON TUFTING MACHINE**

Write for Catalogue and prices of Hand and Power Presses, Button Holders, Plaiters and Mould Boards for Carriage and Auto work.

See our Exhibit C. B. N. A. Convention, Atlantic City.



**THE BUSER-POSTON TUFTING MACHINE CO. CHILLICOTHE, OHIO, U. S. A.**



**HEATH HUB**

**You Won't Find a Flaw**

Manufacture also

**SWEET SARVEN**

**KENNEY SHELL**

**WARNER WOOD**

and

**Automobile Wheels**

**SHORTSVILLE WHEEL CO.,**

**Shortsville, New York**

**DETROIT - MICHIGAN**

**HOTEL NORMANDIE**

GEORGE FULWELL, Prop'r., Congress St., Near Woodward Ave.

**150 Rooms, 50 With Bath  
Hot and Cold Running Water and Telephone  
in All Rooms**

**Americap Plan European Plan  
\$2.50 per Day and Up. \$1.00 Per Day and Up.  
Cafe, Restaurant and Buffet in Connection  
Prices Moderate.**

**TRUCK BUILDERS**

If you only realized the inestimable value of roller bearing fifth wheels on trucks, vans, delivery wagons and all other medium and heavy vehicles, no job would leave your shop without

**Roller Bearing Fifth Wheels**

**WHY?** The adjustment is perfect. No oil or grease required. Almost indestructible. Will outwear any vehicle. Saves horseflesh and prolongs life of vehicle. Ask your jobber for the celebrated

**NIELSON OR KING**

Let us send you Catalogue and Price List.

**American Roller Bearing Fifth Wheel Co.  
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For

**Automobile, Carriage and Wagon Supplies**

**LARGEST WAREHOUSES IN PHILADELPHIA**

Top Fabrics, Transparent Fibre, Brass Fittings, Forgings, Leather, Cloths, Carpets, Wheels, Spokes, Felloes, Etc.

**Let Us Show You the Goods, or Write Us for Attractive Prices**

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Philadelphia, Pa.



**SPRINGS  
FORGINGS**

**BRAKE LEVERS  
AXLES**

THE  
Birthplace  
OF  
High Grade  
Automobile Parts

**THE LEWIS SPRING & AXLE COMPANY  
JACKSON, MICHIGAN**

Select  
REG. U.S. PAT. OFF.  
**FABRIKOID**  
for  
**UPHOLSTERING**

Because it has  
**ATTRACTIVE, EFFECTIVE,  
DISTINCTIVE  
QUALITIES**

Fabrikoid Leather Upholstery attracts the attention of customers. Its sumptuous appearance and wearing ability are effective selling aids to dealers who are receiving constant inquiries developed by our advertising.

Send to Dept. 269 for samples.

**Fabrikoid Dept., Wilmington, Del.**

Owned by

**E. I. duPont de Nemours Powder Co.**

**LEATHER**  
— THAT DON'T CRACK —

That can't be distinguished from machine buffed hide.

That wears as well as expensive leather but costs much less.

Leather with these advantages is Diefenthaler's soft and pliable hides, and we guarantee that no oil will come out.

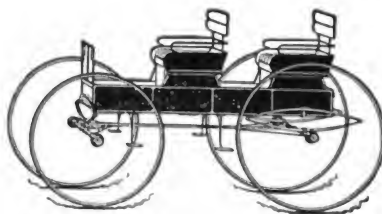
Made specially for carriage and automobile trimmings.

We will send sample hide for your approval without charge.

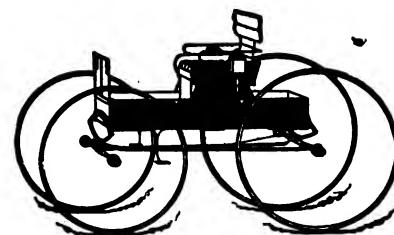
**JOHN V. DIEFENTHALER**  
Hamilton, Bruen and McWhorter Sts.  
**NEWARK, NEW JERSEY**



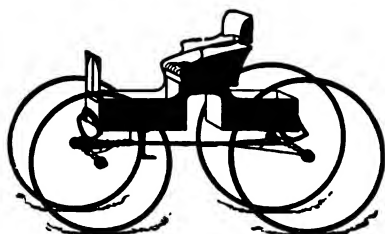
**PLATE 5.**  
Low Wheel Runabout.



**PLATE 10.**  
4 Pass. Beverly Wagon.



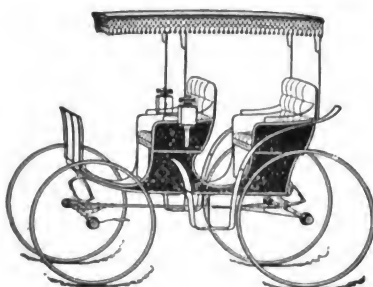
**PLATE 15.**  
2 Pass. Beverly Wagon.



**PLATE 20.**  
Cut-under Buggy.



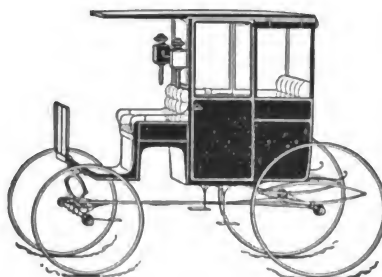
**PLATE 30.**  
Panel-boot Victoria.



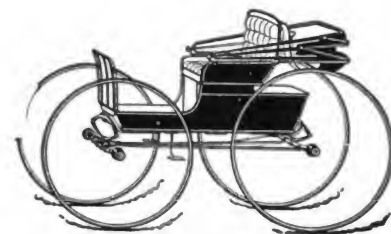
**PLATE 40.**  
Canopy-top Surrey.



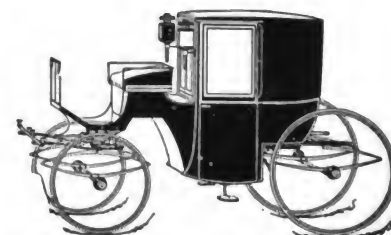
**PLATE 50.**  
Ladies' Phaeton.



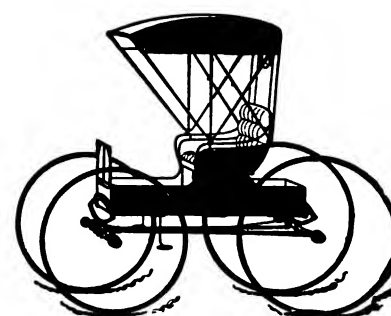
**PLATE 55.**  
Station Wagon.



**PLATE 25.**  
Corning Buggy.



**PLATE 35.**  
Brougham.



**PLATE 45.**  
Elliptic Spring Buggy.



**PLATE 60.**  
Doctor's Phaeton.

## MAKE YOUR ADVERTISEMENT ATTRACTIVE

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Correct in Detail  
Attractive in Appearance**

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A special plate, the size and character of those on this page, of your own design and for your exclusive use, will be furnished for \$3.00.

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**24-26 MURRAY ST.,**  
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**NOVELTY TUFTING  
MACHINE COMPANY**

**TUFTING MACHINE  
SUPPLY COMPANY**

**— ANNOUNCE —**

New Location of Their Executive Offices at

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At this address we carry a full line of Tufting Presses, Button  
Holders, Plaiters, Clinch Buttons, Washers, Areameters, etc.

We will also operate a modernly equipped department for the manufacture of MOULDS OF  
EVERY DESCRIPTION. This will enable us to quote lower prices than ever before.

# IF YOU USE MONARCH BULL DOG REMOVER

**You Know the Value of Time**

By its use you remove all traces of the previous finish [*Varnish, Paint, Shellac, and air-dried  
or baked Enamels*] and at the same time give your attention to other work. . . . .

## MONARCH BULL DOG REMOVER

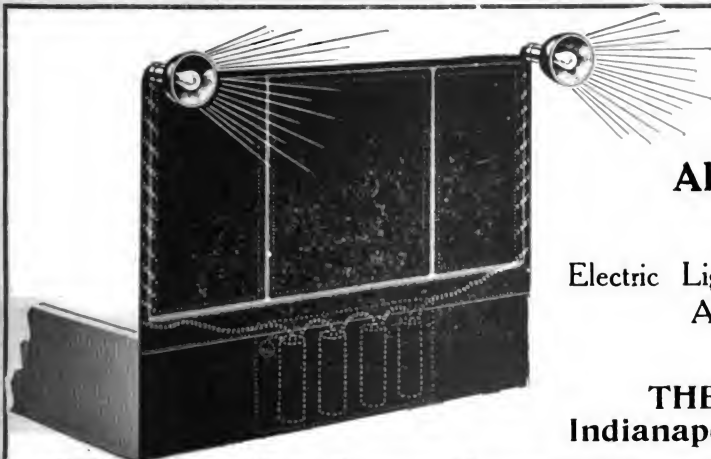
Works without injury to the wood or operator, and will remain moist from TEN to  
TWENTY - FOUR HOURS. . . . . *May we send you sample and descriptive booklet?*

**CHAS. H. GILLESPIE & SONS**

**Jersey City**

**New Jersey**

**VARNISH MAKERS since 1824**



**The Indianapolis Dash Co.**

Manufacturers of

**All kinds of LEATHER DASHES  
and FENDERS**

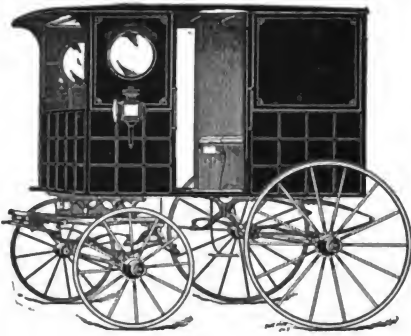
Electric Light Equipment which can be put on any style Dash  
Also three-light equipment for Storm Buggies

Prices on Application

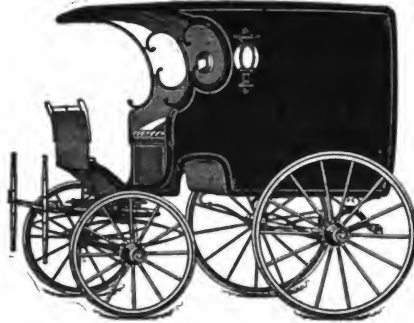
**THE INDIANAPOLIS DASH COMPANY**  
Indianapolis - - - Indiana

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No. 112.—Milk Wagon.



No. 111.—Altman Wagon.



No. 113.—Grocery Wagon.

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of the vehicles presented on this page will be forwarded on receipt of

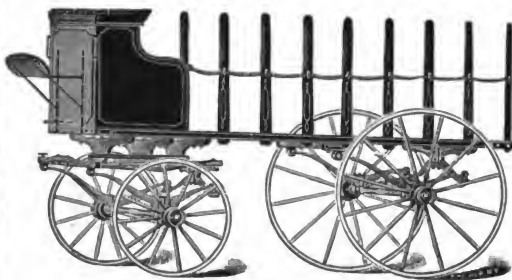
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for each cut, to any address. Postage prepaid.

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containing nearly 200 illustrations of carriages, wagons, sleighs, and miscellaneous cuts will be sent upon application.

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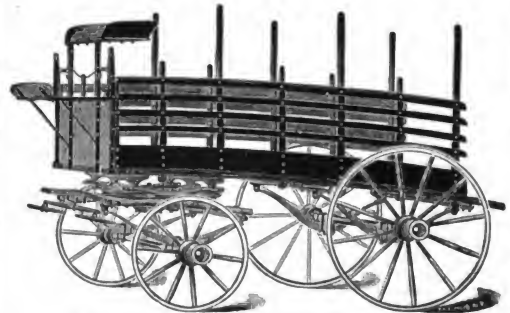
No. 122.—Flour Truck.



No. 115.—Delivery Wagon.



No. 116.—Milk Wagon.



No. 117.—Merchandise Truck.



No. 114.—Delivery Wagon.



No. 124.—Delivery Wagon.



No. 118.—Ambulance.

Which is more perilous  
—farming or metal  
working?

In occupational injury  
where does the  
average of fault lie?

What nation sets the  
standard in  
accident prevention?

On what day  
of the week  
do the  
most accidents  
occur?

How much  
of the compen-  
satory  
award  
reaches the in-  
jured workman?

What relief  
system does  
most  
for indus-  
trial efficiency?

Who are more  
subject to  
accident—  
male or fe-  
male workers?

Why are New  
York accident  
rates many  
liability  
times those  
of Germany?

How can  
American  
liability  
methods be  
improved?

What are the  
defects  
of the English  
system?

How can our  
annual roll of  
over  
1,000,000  
casualties be  
reduced?

What propor-  
tion of the  
insurance  
should the  
employer bear?

What did  
10,000 manu-  
facturers  
say of our  
present liability  
system?

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Chapter III. Detailed Description of Some of the Important Features of the German System—Efficiency, Prompt and Proper Medical Aid, the "Doctor Question," the Contributory Principle.

Chapter IV. Obligatory Insurance An Important Factor in Accident Compensation—Various Forms of Insurance, Mutual Insurance, Statistics, Scientific Inspection, Litigation.

Chapter V. Hazardous Occupations—Comparative Hazard of Industry and Farm.

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Chapter XII. Insurance under the Compensation Acts.

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Chapter XIV. Finding and Recommendations of the Committee.

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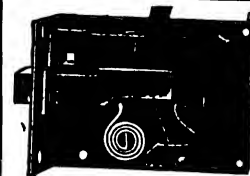
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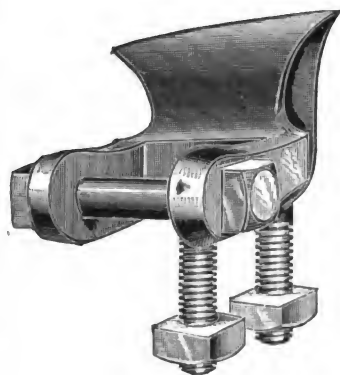
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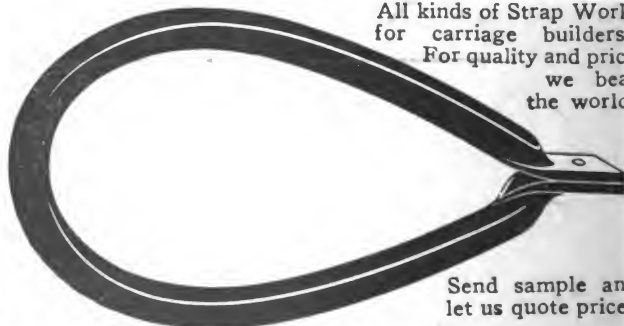
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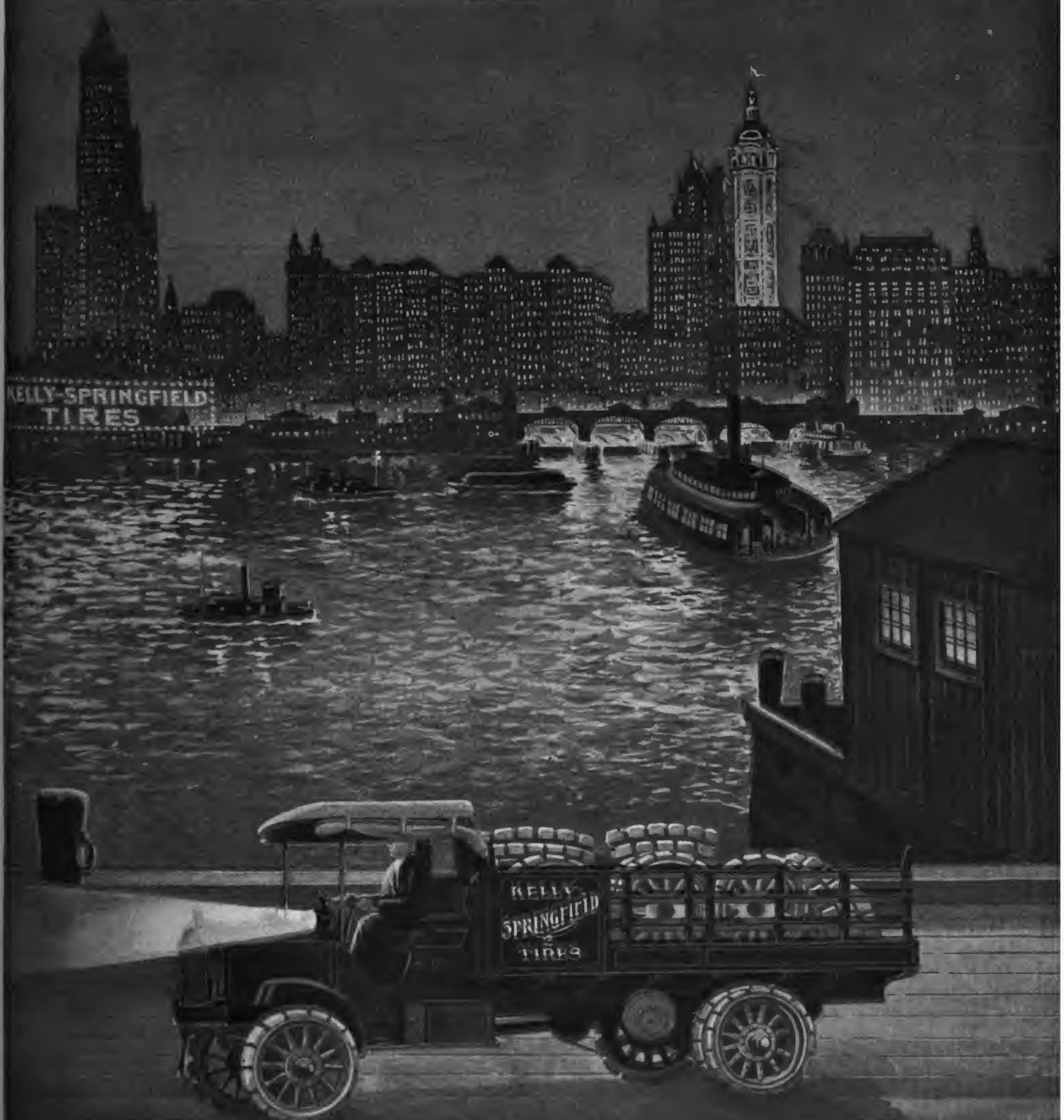


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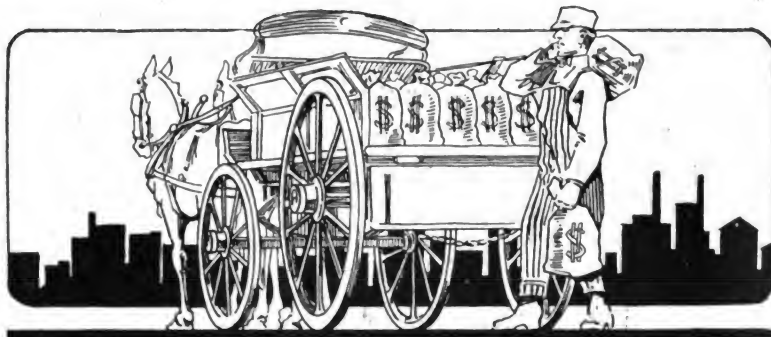
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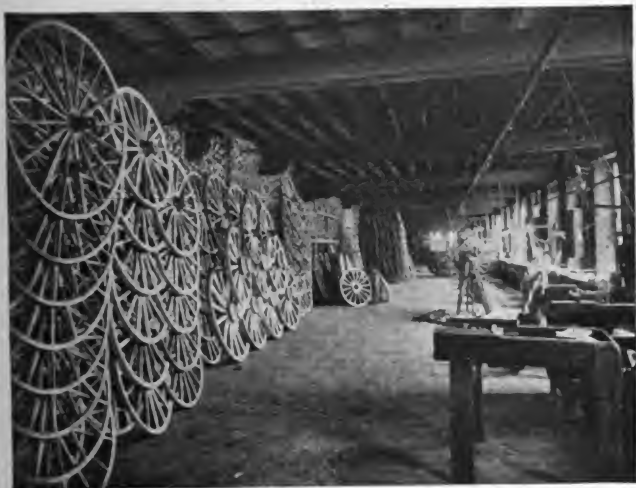
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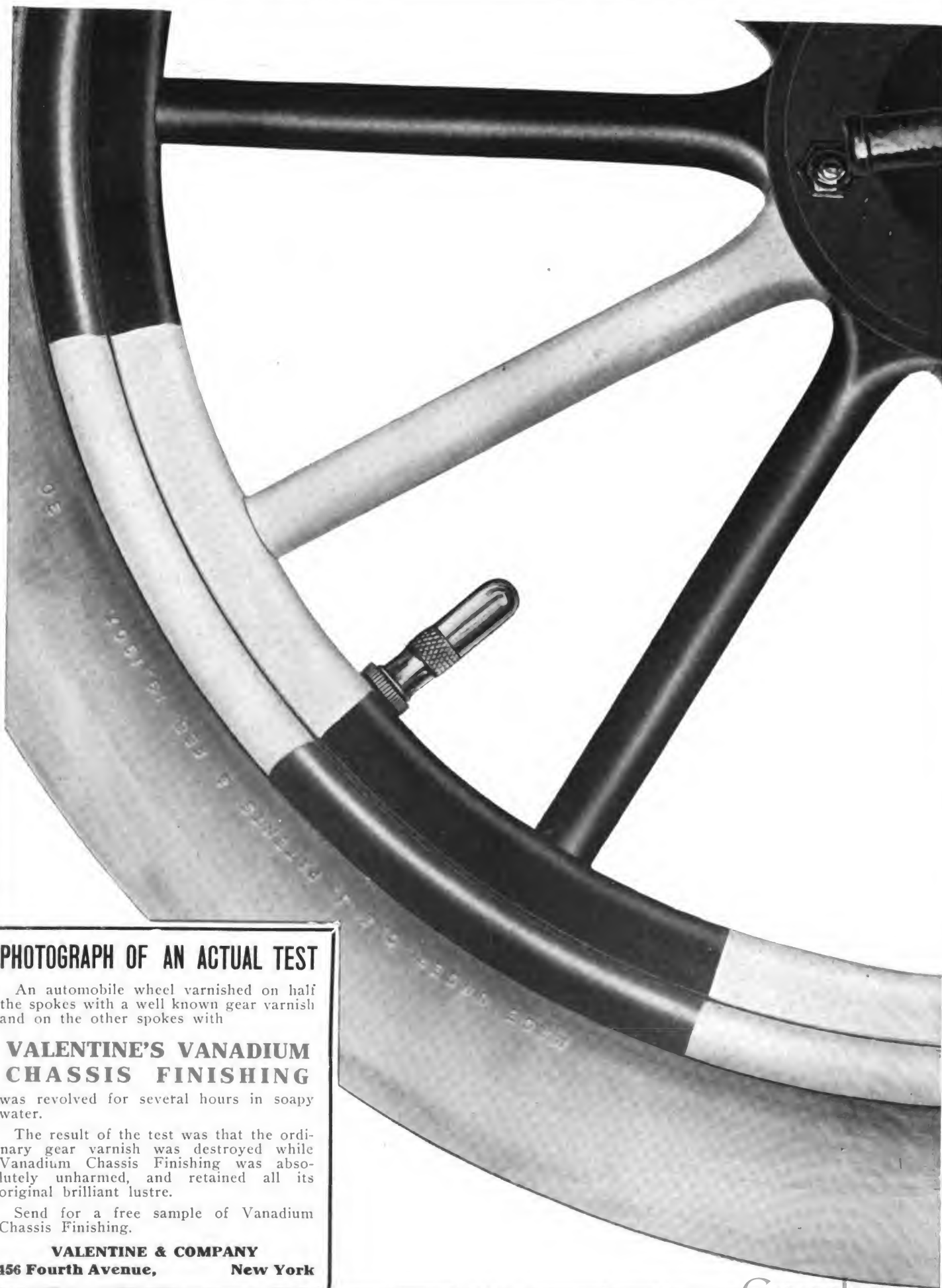
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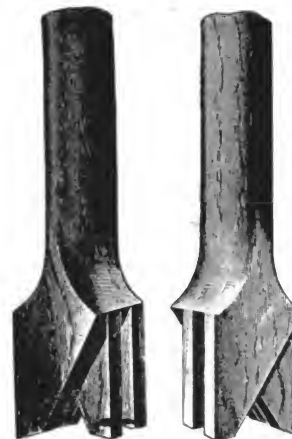
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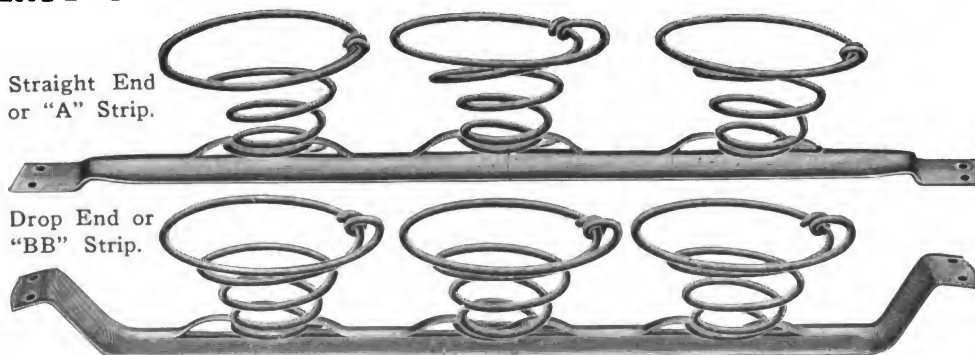
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THE HUB is published monthly in the interest of employers and workmen connected with the manufacture of Carriages, Wagons, Sleighs, Automobiles and the Accessory trades, and also in the interest of Dealers.

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For advertising rates, apply to the Publishers. Advertisements must be acceptable in every respect. Copy for new advertisements must be received by the 25th of the preceding month, and requests to alter or discontinue advertisements must be received before the 12th day of the preceding month to insure attention in the following number. All communications must be accompanied by the full name and address of writer.

### FOREIGN REPRESENTATIVES:

FRANCE.—L. Dupont, publisher of *Le Guide des Carrossiers*, 78 Rue Boissiere, Paris. Subscription price, 15 francs, postpaid.

GERMANY.—Gustave Miesen, Bohn a Rh. Subscription price, 12 marks, postpaid.

ENGLAND.—Thomas Mattison, "Floriana," Hillside Avenue, Bitterne Park, Southampton. Subscription price, 12 shillings, postpaid.

Entered in the New York Post Office as Second-class Matter.

## Large Wheels

We wonder why a larger wheel is not attempted on the automobile used for trucking purposes.

When the many good points of a wheel of large diameter are thought about, it is curious that no one has made a move in that direction. Possibly the price of rubber tires has somewhat to do with it, but we have noticed a conspicuously successful machine-truck that had steel tires. It was of French origin and used in the army with good effect, it was said.

During the brief era of the "high-wheel buggy," run with power, the wheels were of ordinary, or usual dimensions, and served the purpose very well, indeed.

We have heard it stated by those who were interested in its exploitation that nothing interfered with its success but its unfashionable appearance. The farmers who were looked to as its largest buyers kept the picture of the low-wheeled car and the touring body in the eye and wanted the popular, hence fashionable style of vehicle, so the high-wheeler faded away.

Presumably the same prejudice would not be encountered among buyers of business vehicles.

We have an idea the high-wheel truck will make its

how to the buying public some day, but it will come by way of the European route after being well tried out in such quarters.

There is much that the wheel of large diameter can do in lifting out of or over a hole that makes it most serviceable.

Probably it is, after all, only a consideration of the cost of rubber.

## New Quarters on Young's Pier

A severe storm this summer blew into the sea the superstructure on Young's Million Dollar Pier where the Carriage Builders' National Association held the exhibition last year, so it has been necessary to move the place of the exhibits closer to the entrance from the boardwalk. The place used for a roller skating rink ordinarily will be utilized this time for the exhibits.

It is quite well adapted for the purpose, has ample room, and it is well protected against the attack of the elements; it may be a much better location on that account.

Last year luck favored the exhibitors in the matter of good weather, but the Friday that marked the day after the closing was a good example of what a storm could do if it really meant business. In the present location the protection is ample, the light good, and it does not involve such a walk to get to the scene of the activity.

## The Pyrometer

The toughest of fibre, hence the best steel vehicle springs for automobile work, are subjected to a heat treatment that is very intense, and the operation is fraught with much risk of failure if the heat is not just what it should be in all of many conditions of treatment.

The pyrometer has been found of the greatest service. perhaps it should be said indispensable. A little about the history of this instrument ought to be interesting to those who fuss with steel springs, or any metal.

It was learned that metal of different kinds welded together produced an electric current, and this was the idea availed of to measure heat no matter what its intensity.

The current is measured by voltage, and certain temperatures produce certain values in electric strength, and thus the degree of heat is measured. The measure is degrees of heat. It has been found very accurate.

The pyrometer can be placed at a distance from the



furnace and it will record the conditions inside the furnace with accuracy.

It is such small discoveries as the pyrometer that are most responsible for many of the greatest steps in advance.

## The Passenger's Seat

We have a mild wonder to be gratified. We are wondering who is responsible for inducing the motor car passenger to think he wants to ride on the floor of the car, chin almost resting on knees, and the spinal column doing the support act.

This does not seem as if it was a sensible way of building in seats, no matter how deeply upholstered.

It is the kind of seat that must give the body builder great concern when he is asked to allow for three on the rear seat with only about four feet for clear space in which to function. The track should be wider or the character of seat different.

But the vehicle builder is a man of patience and meekness, so he takes the kind of chassis offered without criticism, he takes the customer's commands without protest, and then he does wonders with the conditions at command. He could do better, much better, if there were an inclination to listen to his still, small voice at times.

There seems never yet to have been a clear realization by those interested that the vehicle is primarily and finally intended and supposed to be designed for the use and comfort of the rider.

## Fads and Fancies

It comes as a surprise even to the more or less sophisticated how many details of design have to be considered in motor car construction.

It is not until the passenger is well on his journey that this, that and the other is discovered that makes for discomfort. It is usually something that would never be thought out in theory, but has to be left to practice to discover.

Perhaps there is such a demand for luxurious comfort, unknown to the general vehicle builder, that even the crumpled rose leaf is complained of, but it is sure that the refinements of construction include a multitude of small details that would never have been thought of, or if thought of, considered, by the old-time vehicle builder.

Perhaps the thing is overdone. After all, a motor car is not an apartment house with hot water supply, etc.

## Electric Vehicles

For city deliveries the electric vehicle seems to be more highly esteemed than at any previous time. There are more of them in service and their ratio of increase seems to be greater than with the gasoline truck.

So many improvements have been made in the batteries that it is now possible, we understand, for the maker to guarantee just the amount of power and service, as well

as just the speed the buyer contracts to have delivered to him.

The ease of operation, conjoined to the simplicity, makes it a simple manner for any driver to quickly become used to the management of the wagon. This is a very great card.

Any work calling for frequent stops can use an electric most economically, because when the current is shut off there is no waste until it is turned on again.

For light delivery it is very mobile—fact, electro-mobile.

## Motor Museum

It is most interesting to note that the only museum of motor cars, in temporary quarters at present, has been due to the initiative and generosity of a trade journal, *The Motor*, in England.

The collection already is important, unique, and reminiscent to a degree.

To think that an industry so young should already have accumulated its freaks is not the least engaging thought about this museum.

## Price of Export Automobiles

The export prices of automobiles, expressed in average value, were \$1,880 in 1908. The latest returns for 1912 put them at \$990.

This would seem to indicate quite a decrease in the cost of manufacture.

## C. B. N. A. OFFICIAL CONVENTION NOTICE

Office of the Secretary and Treasurer,  
Mount Vernon, N. Y., September 2, 1912.

The Carriage Builders' National Association extends to the carriage, wagon and sleigh builders of the United States a cordial invitation to attend the Fortieth Annual Convention of their association at Atlantic City, N. J., September 23-27 of this year.

A visit to the convention and exhibition of the materials used in the construction of your products and in your business, and a few days spent by the sea in that delightful city cannot help being of benefit to you in every way.

The association will be happy to see you and you will be welcome whether a member or not. The convention and exhibition are free to every vehicle builder, as our sole purpose is to benefit all builders of vehicles.

By direction of the association,

HENRY C. McLEAR, Secretary.

## NATIONAL FEDERATION CONVENTION

The annual meeting of the National Federation of Retail Implement and Vehicle Dealers' Associations will be held in Chicago, October 8, 9 and 10. On account of the co-operation of the Sales Managers' Section of the National Implement and Vehicle Association, the manufacturers' organization, it is expected some needed reforms in the trade will be accomplished.

The board of directors again selected the Lexington hotel at which house the Federation has held its sessions for the past five years as headquarters. Nearly all of the constituent associations have reported the selection of full quotas of delegates and a large attendance is expected.

## PROGRAMME C. B. N. A., ATLANTIC CITY, SEPTEMBER 24-26

### First Day—Tuesday, September 24, 10 a. m.

It is the desire of the president of the association that the proceedings should open promptly at the hour named. The ladies visiting the convention are most cordially invited to this session.

Singing by the Glee Club.

The meeting will be called to order by the president, Mr. W. H. McCurdy, of Evansville, Ind.

Address of welcome by the Hon. William Riddle, Mayor of Atlantic City.

Response by a member of the association.

Opening address of the president, Mr. W. H. McCurdy.

Report of the executive committee, Mr. Charles A. Lancaster, South Bend, Ind., chairman.

Nomination of president for the ensuing year.

Appointment of the committee on resolutions.

Appointment of the committee to recommend officers for the ensuing year.

Appointment of the committee on the exhibition.

Appointment of the obituary committee.

Announcement of the invitations received from cities desiring the convention next year.

On this Tuesday evening, September 24, the reception to the members and ladies will be at the Marlborough-Blenheim, from 8 to 11 o'clock. All members and the ladies attending the convention are invited to be present.

### Second Day—Wednesday, September 25, 10 a. m.

Singing by the Glee Club.

Meeting will be called to order by the president, Mr. W. H. McCurdy.

Report of the secretary and treasurer, Henry C. McLearn, Mt. Vernon, N. Y.

Address by Mr. Charles T. Bates, Philadelphia, "The Need for a Traffic Manager."

Report of committee on Good Roads, Mr. George A. Brockway, Homer, N. Y., chairman.

Report of the trustees of the Technical School, Mr. Charles J. Richter, New York, chairman.

Report of the committee on new members, Mr. W. H. Roninger, St. Louis, Mo.; Mr. C. O. Wrenn, Norfolk, Va., and Mr. W. H. Son, Wilkes-Barre, Pa., chairman.

Report of the committee on fire insurance, Mr. Lewis Straus, Newark, N. J., chairman.

Report of committee to recommend officers for ensuing year.

Election of president.

### Third Day—Thursday, September 26, 10 a. m.

Singing by the Glee Club.

Meeting will be called to order by the president, Mr. W. H. McCurdy.

Report of the committee on the conservation of the resources of the country, Mr. C. C. Hull, Connersville, Ind., chairman.

Address by Charles H. Hassert, Esq., Philadelphia, "Credits and Collections in the Vehicle Business."

Report of the committee on the abuses in the carriage and accessory trades, Mr. Perrin P. Hunter, Cincinnati, Ohio, chairman.

Report of the committee on freight and classification, Mr. Theo. Luth, Cincinnati, Ohio, chairman.

Consideration of the report of the executive committee.

Unfinished business.

New business.

Election of officers.

Report of the committee on resolutions.

Report of the committee on exhibition.

Report of the obituary committee.

Selection of a place for the next convention.

Adjournment.

Annual Banquet—Marlborough-Blenheim, 7 p. m.

The admission to the pier will be by the association badge, which will be given each member on his registration, and to all vehicle builders visiting the exhibition.

As the general public is required to pay an admission fee to the pier, you will see the importance of registering immediately upon your arrival, and securing your badge, which will admit you free of charge.

The registry book will be at the entrance to the pier from Friday, the 20th, until Friday, the 27th, from 8 a. m. to 5 p. m. Don't fail to register at once.

After September 17 the address of the secretary will be the Marlborough-Blenheim, Atlantic City, N. J., and until after the convention. By order of the executive committee.

HENRY C. McLEAR, Secretary.

## LIST OF EXHIBITORS FOR C. B. N. A. AS LISTED TO AUGUST 1, 1912

American Tire Drill Co., Cincinnati, O.  
Akron-Selle Gear Co., Akron, O.  
Blacksmith and Wheelwright, New York.  
C. C. Bradley & Son, Syracuse, N. Y.  
Backstay Machine & Leather Co., Union City, Ind.  
Buser-Poston Tufting Machine Co., Chillicothe, O.  
Carriage and Wagon Builder, Philadelphia, Pa.  
L. C. Chase & Co., Boston.  
Geo. R. Carter Co., Connersville, Ind.  
Cleveland Hardware Co., Cleveland, O.  
Cately & Ettling, Cortland, N. Y.  
Cortland Carriage Goods Co., Cortland, N. Y.  
Central Manufacturing Co., Connersville, Ind.  
Carriage Woodstock Co., Owensboro, Ky.  
C. Cowles & Co., New Haven.  
Dayton Malleable Iron Co., Dayton, O.  
Diamond Rubber Co., Akron, O.  
The Eberhard Manufacturing Co., Cleveland.  
Richard Eccles Co., Auburn, N. Y.  
Firestone Tire & Rubber Co., Akron, O.  
Fairfield Rubber Co., Fairfield, Conn.  
Fabrikoid Works, Wilmington, Del.  
Federal Rubber Mfg. Co., Milwaukee, Wis.  
Gresham Mfg. Co., Griffin, Ga.  
Goodyear Tire & Rubber Co., Akron, O.  
Jacob Gerhab, Philadelphia, Pa.  
The Hub, New York City.  
Herbrand Co., Fremont, O.  
Illinois Iron & Bolt Co., Carpentersville, Ill.  
Keystone Forging Co., Northumberland, Pa.  
Indiana Lamp Co., Connersville, Ind.  
Andrew Kimble Co., Zanesville, O.  
Kelly-Springfield Tire Co., New York.  
Liggett Spring & Axle Co., Pittsburgh, Pa.  
Metal Stamping Co., Long Island City, N. Y.  
Mohawk Valley Mfg. Co., Utica, N. Y.  
Monarch Carriage Goods Co., Cincinnati, O.  
John W. Masury & Son, New York.  
National Malleable Casting Co., Cleveland, O.  
Pioneer Pole and Shaft Co., Piqua, O.  
Peters & Herron Dash Co., Columbus, O.  
F. O. Pierce Co., New York.  
P. Rielly & Son, Newark, N. J.  
R. E. Rodriguez, New York.  
Ditzler Color Co., Detroit, Mich.  
Rose Mfg. Co., Philadelphia, Pa.  
Jas. H. Rhodes & Co., Chicago, Ill.  
E. F. Rodgers & Co., Philadelphia, Pa.  
Spokesman, Cincinnati, O.  
M. Straus & Sons, Newark, N. J.  
Sheldon Axle Co., Wilkes-Barre, Pa.  
Standard Varnish Works, Chicago, Ill.  
Sherwin-Williams Co., Cleveland, O.  
Edward Smith & Co., New York.  
Scranton Axle & Spring Co., Scranton, Pa.  
U. S. Tire Co., New York.  
Valentine & Co., New York.  
Ware Bros. Co., Philadelphia, Pa.  
Western Spring & Axle Co., Cincinnati, O.  
C. A. Willey Co., Hunters Point, N. Y.  
Lowe Bros., Dayton, O.  
Campbell & Dann Mfg. Co., Tullahoma, Tenn.  
Crandall-Stone & Co., Binghamton, N. Y.  
Mifflingburg Body and Gear Co., Mifflingburg, Pa.  
The Mulholland Co., Dunkirk, N. Y.



Clarence Brooks & Co., Newark, N. J.  
 Fernald Mfg. Co., North East, Pa.  
 International Rubber Co., New York.  
 McKinnon Dash Co., Buffalo, N. Y.  
 Standard Wheel Co., Terre Haute, Ind.  
 Geo. Tiel & Co., Philadelphia, Pa.  
 Valentine & Co., New York.  
 D. Wilcox Mfg. Co., Mechanicsburg, Pa.  
 Peter Woll & Sons Mfg. Co., Philadelphia, Pa.  
 York Wagon Gear Co., York, Pa.

### WHERE IS J. H. MULLIN?

The Hub has recently received a number of inquiries concerning the whereabouts of Mr. J. H. Mullin, for many years a contributor to the columns of The Hub, and who has been employed in the drafting departments of a number of carriage manufacturing plants in the middle west. The Hub will be pleased to receive any information indicating his whereabouts.

### BLEES BUGGY CO. LIQUIDATES

The Blees Buggy Co., one of the largest enterprises founded by the late Col. F. W. Blees at Macon, Mo., is in liquidation.

The present owners are business men of Kansas City. G. L. Miles, the general manager, said that the proprietors had decided to liquidate and close up the business because of the slack demand for the output.

The factory will be run until orders on hand can be finished up. Mr. Miles hopes that arrangements may be made to continue the business. It employed a large number of men, and is the most extensive commercial building in Macon. In his lifetime Col. Blees had his private offices there and devoted his personal attention to the business.

### PARRY BOWLING TEAM CUP WINNERS IN INDIANAPOLIS LEAGUE

Parry Manufacturing Company exerts many influences to keep its employes keyed up to a high degree of enthusiasm and loyalty.

All sorts of athletic sports are fostered by the company and there is a strong rivalry among employes for positions on the various teams representing the company.

The team did consistent bowling during the past winter in the Business Men's Bowling League, consisting of twelve different teams, and on July 4 were awarded a handsome cup, having captured it with a team average of .666, winning 60 out of 90 games.

Members of the team were also particularly fortunate in running away with the individual prizes and captured six of the thirteen medals offered to individuals.

### DATES OF DEALERS' CONVENTIONS

Illinois Retail Implement and Vehicle Dealers' Association, at Peoria, October 1, 2 and 3, 1912.

Tri-State Vehicle and Implement Dealers' Association, at Cincinnati, October 15, 16 and 17, 1912.

Michigan Retail Implement and Vehicle Dealers' Association, at Saginaw, November 19, 20 and 21, 1912.

Iowa Implement Dealers' Association, at Des Moines, December 3, 4, 5 and 6, 1912.

Oklahoma Hardware and Implement Association, at Oklahoma City, December 3, 4 and 5, 1912.

Wisconsin Retail Implement and Vehicle Dealers' Association, at Milwaukee, December 10, 11 and 12, 1912.

Retail Implement Dealers' Association of South Dakota, Southwestern Minnesota and Northwestern Iowa, at Sioux Falls, December 10, 11 and 12, 1912.

Midwest Implement Dealers' Association, at Omaha, January 8, 9 and 10, 1913.

Minnesota Retail Implement Dealers' Association, at Minneapolis, January 8, 9 and 10, 1913.

Western Retail Implement and Vehicle Dealers' Association, at Kansas City, January 14, 15 and 16, 1913.

Pacific Northwest Hardware and Implement Association, at Spokane, January 15, 16 and 17, 1913.

Texas Hardware and Implement Association, at Dallas, February 11, 12 and 13, 1913.

### National Conventions

National Federation Retail Implement and Vehicle Dealers' Association, at Chicago, October 8, 9 and 10, 1912.

National Implement and Vehicle Association, at Cleveland, October 23, 24 and 25, 1912.

### CLEVELAND CONVENTION

E. W. McCullough, secretary and general manager of the National Implement and Vehicle Association, has issued a schedule of rates of the Hotel Statler, Cleveland, where the 1912 convention of the association will be held. The rates range from \$2 to \$5 per day, with \$1.50 extra charge for a second person occupying the same room. Mr. McCullough asks those who are planning to attend the convention to make early reservations.

### DEATH OF P. J. CAIRNS

P. J. Cairns, secretary of George Stengel, Inc., tanners of Newark, N. J., died August 26. He was a member of the firm of George Stengel since it started, about forty years ago. Mr. Cairns was vice-president of the Patent & Enamel Leather Manufacturers' Association, and at a special meeting held at the Board of Trade rooms, Newark, appropriate resolutions were adopted.

### NEW GOODRICH OFFICES

Plans have been approved for the erection of a large addition to the office building of the B. F. Goodrich Company, at Akron, Ohio. It is the intention to unite the office forces of the Goodrich and the Diamond Company. The new office building will be 228 feet long and five stories high. The cost of the addition will be about \$100,000.

### ANOTHER TIRE COMPANY

The Marathon Tire & Rubber Company, of Akron, Ohio, has been incorporated with a capital stock of \$10,000 to manufacture rubber goods of all kinds, including automobile and motor-cycle tires. The incorporators are Ellis R. Diehm, C. C. Owens, Sterling Newell, Donald McBride and H. J. Crawford.

### CHICAGO AUTO SHOW

Application blanks for space at the thirteenth annual automobile show at Chicago have been issued. The pleasure car section will be held February 1-8 and the commercial vehicle section February 10-15. The rental rate is fixed at 90 cents a square foot for each show.

### SALES MANAGERS' CONVENTION

The Sales Managers' Convention, decided upon a short time ago by the Trade Committee of the Automobile Board of Trade, will be held at its headquarters in New York on Monday and Tuesday, September 30 and October 1, 1912.

### AUTOMOBILE TOURISTS' BOOK

The Automobile Tourists' Book of New England is just from the press of the Tourist Publishing Company, of Boston. It contains 400 pages of really practical information actually necessary to all owners touring the eastern states.

# THE HUB STYLE PORTFOLIO



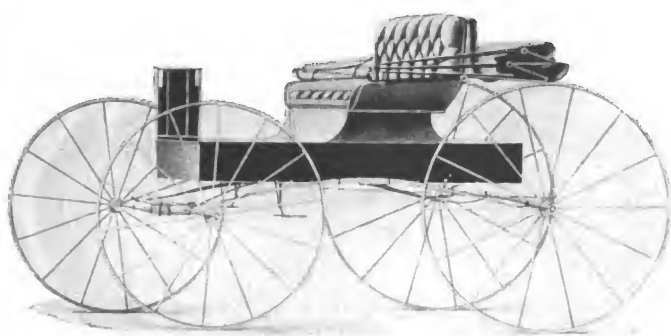
## LIST OF CONTRIBUTORS

The Adams Bros. Co., Findlay, O.  
Ames-Dean Carriage Co., Jackson, Mich.  
Anchor Buggy Co., Cincinnati, O.  
Argo Electric Vehicle Co., Saginaw, Mich.  
H. H. Babcock Co., Watertown, N. Y.  
S. R. Bailey & Co., Inc., Boston, Mass.  
Broc Electric Vehicle Co., Cleveland, O.  
Wm. N. Brockway, Homer, N. Y.  
Brookshire & Robinson Co., St. Paris, O.  
Chalmers Motor Co., Detroit, Mich.  
Columbus Buggy Co., Columbus, O.  
Commercial Truck Co. of America, Philadelphia, Pa.  
Crown Commercial Car Co., Milwaukee, Wis.  
John Deere Plow Co., St. Louis, Mo.  
Durham Buggy Co., Durham, N. C.  
Excelsior Carriage Co., Watertown, N. Y.  
Gaylord Motor Car Co., Gaylord, Mich.  
Geneva Wagon Co., Geneva, N. Y.  
Gerstenslager Co., Wooster, O.  
Goldsboro Buggy Co., Goldsboro, N. C.  
Great Western Automobile Co., Peru, Ind.  
Hatfield Auto Truck Co., Elmira, N. Y.

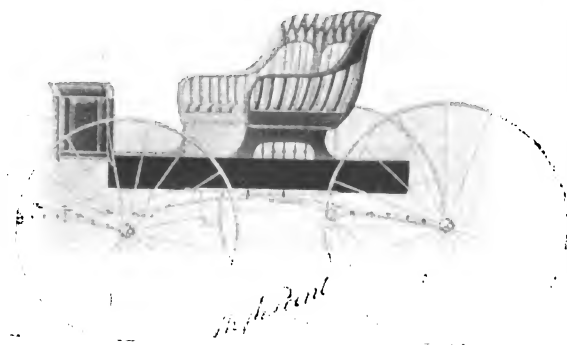
High Point Buggy Co., High Point, N. C.  
Hopp Carriage Co., Mifflinburg, Pa.  
Keys Bros., Council Bluffs, Ia.  
Knox Automobile Co., Springfield, Mass.  
La Porte Carriage Co., La Porte, Ind.  
Milburn Wagon Works, Toledo, O.  
Northwestern Manufacturing Co., Fort Atkinson, Wis.  
Oettinger Buggy Co., Greensboro, N. C.  
Parry Manufacturing Co., Indianapolis, Ind.  
W. A. Paterson Co., Flint, Mich.  
Poss Motor Co., Detroit, Mich.  
Prouty & Glass Carriage Co., Wayne, Mich.  
Rauch & Lang Carriage Co., Cleveland, O.  
Sayers & Scovill Co., Cincinnati, O.  
Seidel Buggy Co., Richmond, Ind.  
Staver Carriage Co., Chicago, Ill.  
Studebaker Corporation, South Bend, Ind.  
Sturtevant & Larrabee, Binghamton, N. Y.  
Veerac Motor Carriage Co., Anoka, Minn.  
Williams Manufacturing Co., Macon, Ga.  
Winkler Bros. Manufacturing Co., South Bend, Ind.  
Zimmerman Manufacturing Co., Auburn, Ind.

SEPTEMBER, 1912

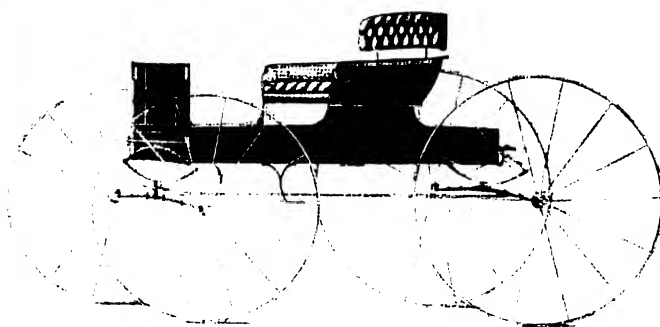
# OPEN AND TOP BUGGIES



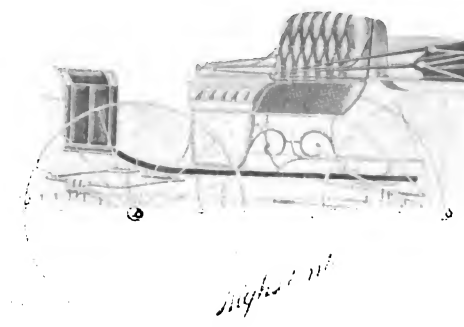
H. H. BABCOCK CO.  
Watertown, N. Y.



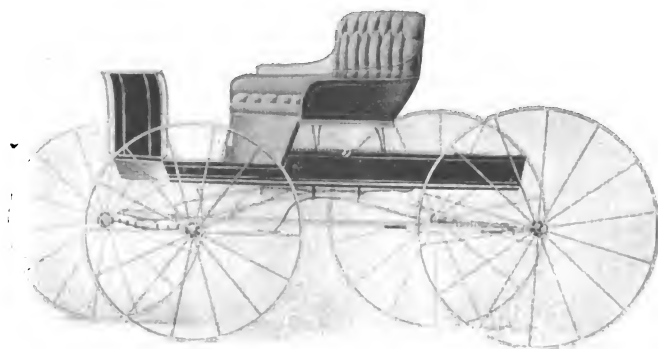
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High Point, N. C.



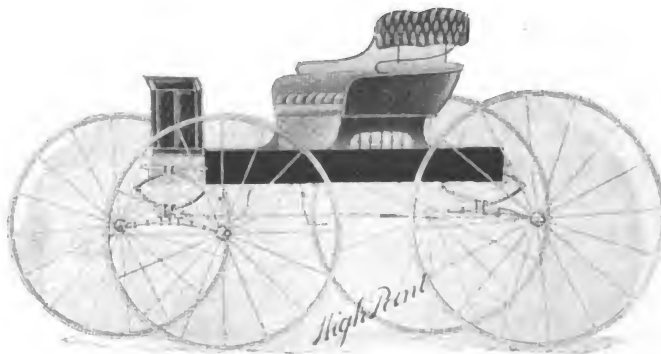
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Watertown, N. Y.



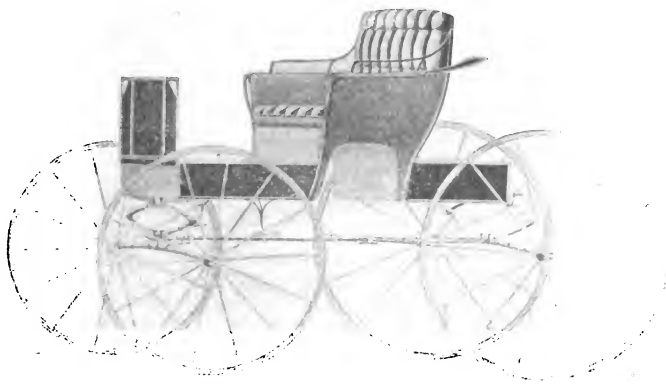
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High Point, N. C.



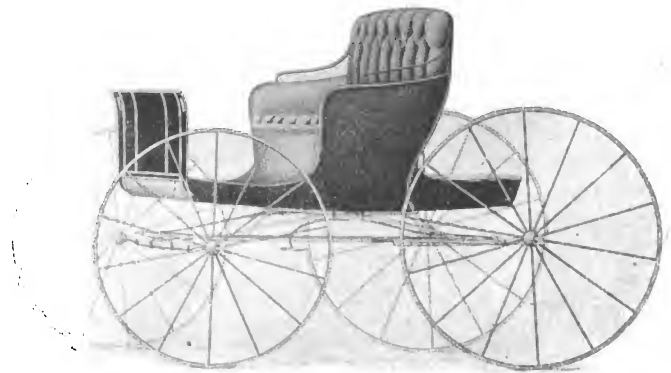
EXCELSIOR CARRIAGE CO.  
Watertown, N. Y.



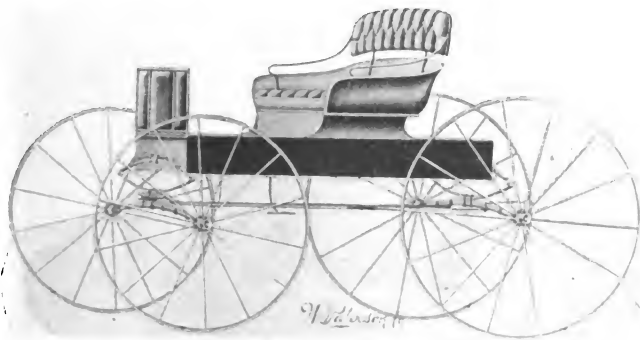
HIGH POINT BUGGY CO.  
High Point, N. C.



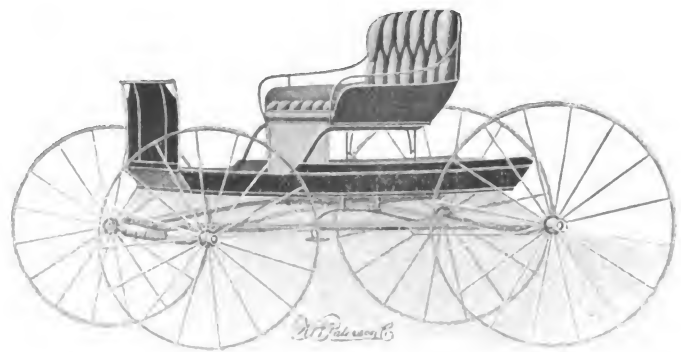
**GERSTENSLAGER CO.**  
Wooster, O.



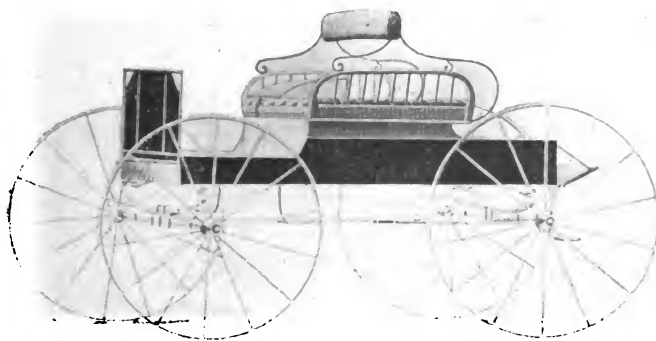
**EXCELSIOR CARRIAGE CO.**  
Watertown, N. Y.



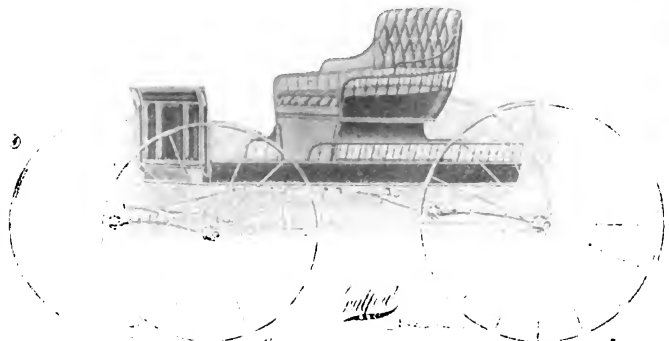
**W. A. PATERSON CO.**  
Flint, Mich.



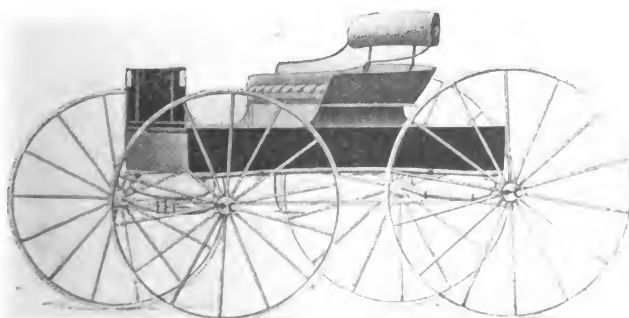
**W. A. PATERSON CO.**  
Flint, Mich.



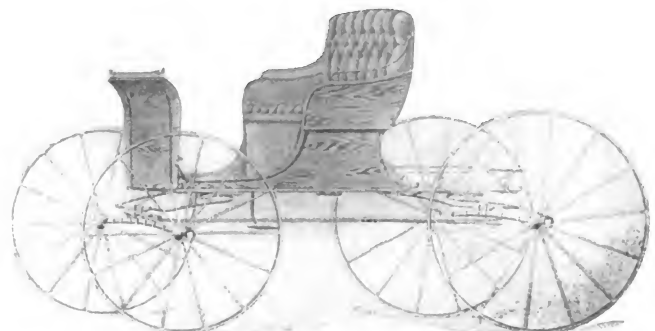
**WM. N. BROCKWAY**  
Homer, N. Y.



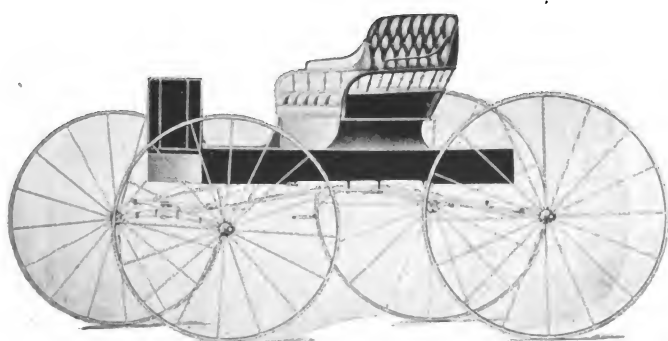
**OETTINGER BUGGY CO.**  
Greensboro, N. C.



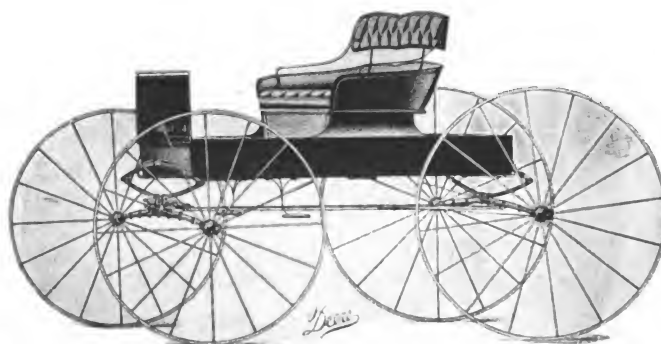
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Homer, N. Y.



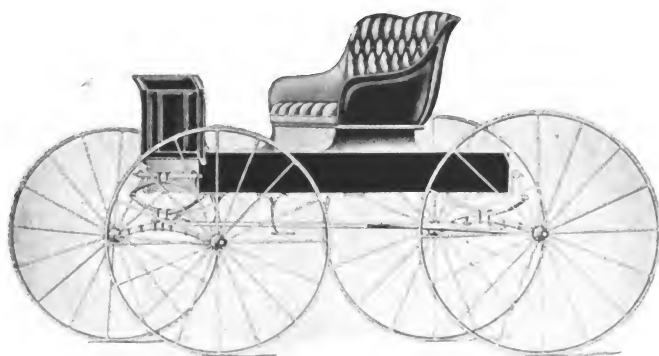
**AMES-DEAN CARRIAGE CO.**  
Jackson, Mich.



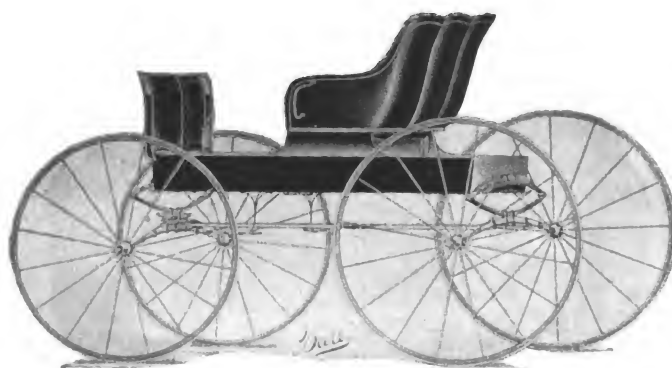
**PARRY MANUFACTURING CO.**  
Indianapolis, Ind.



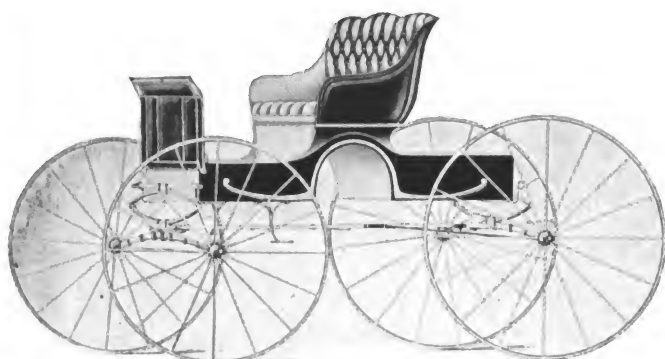
**JOHN DEERE PLOW CO.**  
St. Louis, Mo.



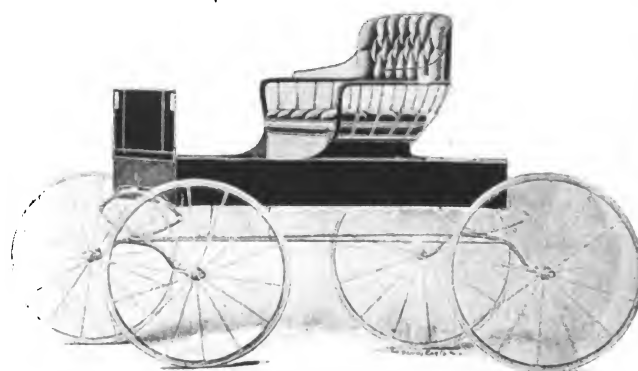
**PARRY MANUFACTURING CO.**  
Indianapolis, Ind.



**JOHN DEERE PLOW CO.**  
St. Louis, Mo.



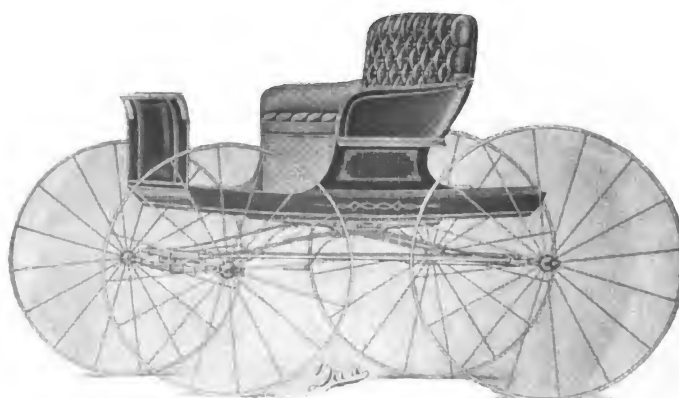
**PARRY MANUFACTURING CO.**  
Indianapolis, Ind.



**HOPP CARRIAGE CO.**  
Mifflinburg, Pa.

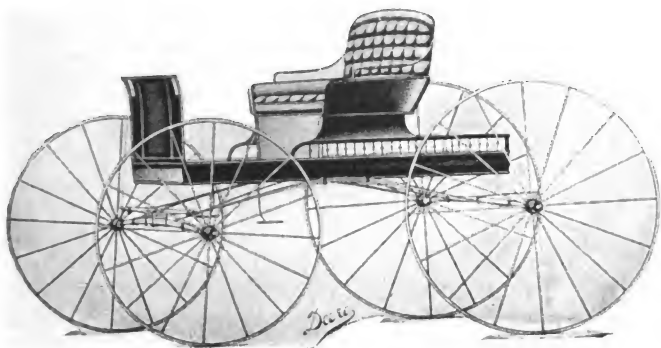


**JOHN DEERE PLOW CO.**  
St. Louis, Mo.

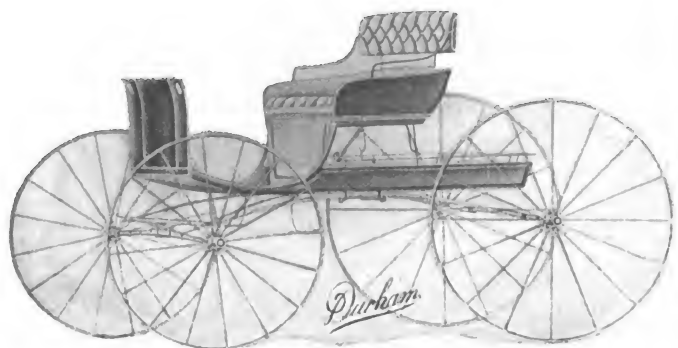


**JOHN DEERE PLOW CO.**  
St. Louis, Mo.

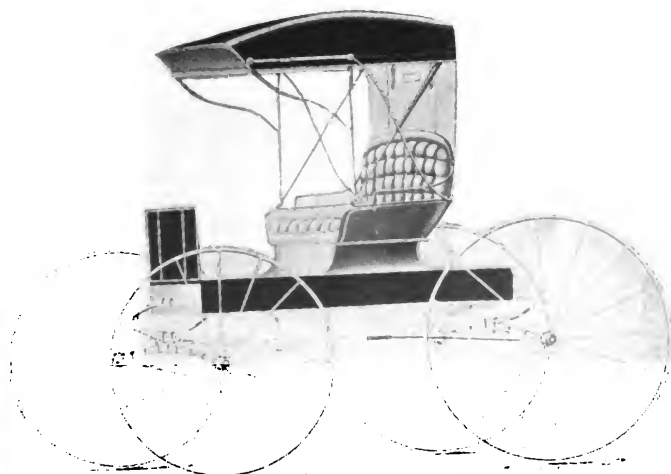




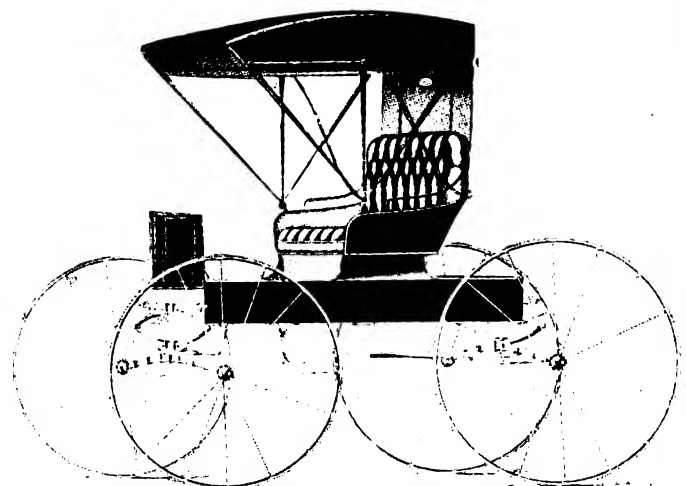
JOHN DEERE PLOW CO.  
St. Louis, Mo.



DURHAM BUGGY CO.  
Durham, N. C.



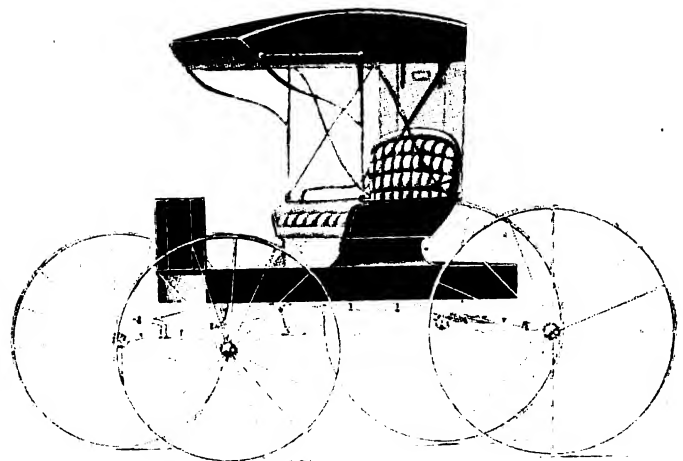
PARRY MANUFACTURING CO.  
Indianapolis, Ind.



PARRY MANUFACTURING CO.  
Indianapolis, Ind.



W. A. PATERSON CO.  
Flint, Mich.



PARRY MANUFACTURING CO.  
Indianapolis, Ind.



**GERSTENSLAGER CO.**  
Wooster, O.



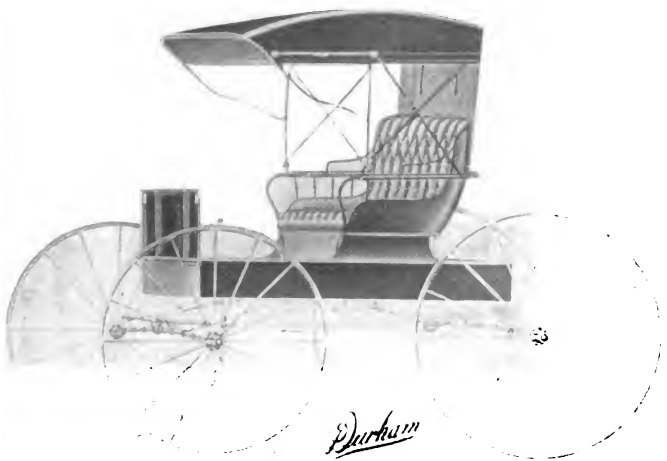
**SAYERS & SCOVILL CO.**  
Cincinnati, O.



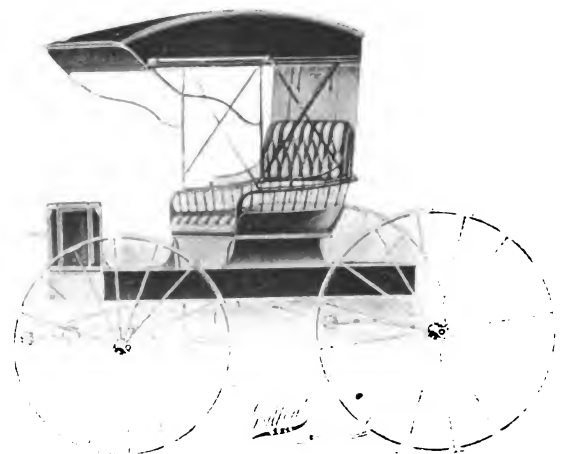
**W. A. PATERSON CO.**  
Flint, Mich.



**SAYERS & SCOVILL CO.**  
Cincinnati, O.



**DURHAM BUGGY CO.**  
Durham, N. C.



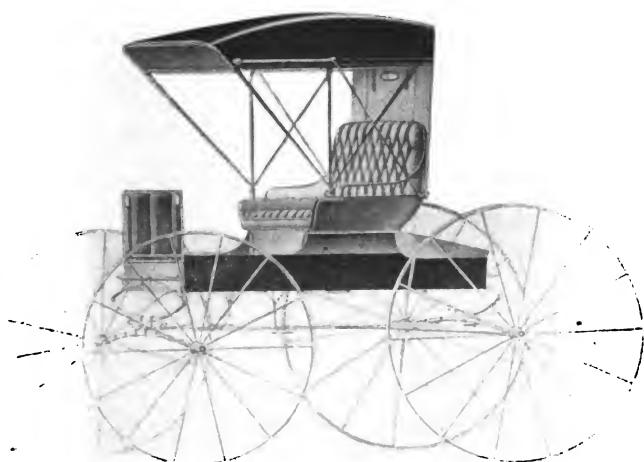
**OETTINGER BUGGY CO.**  
Greensboro, N. C.



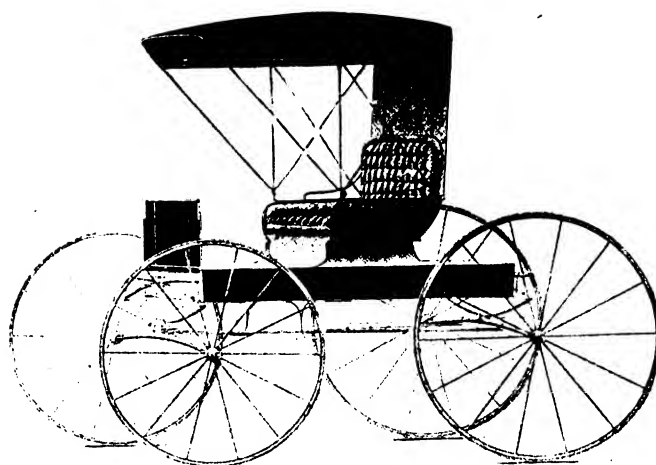
**W. A. PATERSON CO.**  
Flint, Mich.



**DURHAM BUGGY CO.**  
Durham, N. C.



**SAYERS & SCOVILL CO.**  
Cincinnati, O.



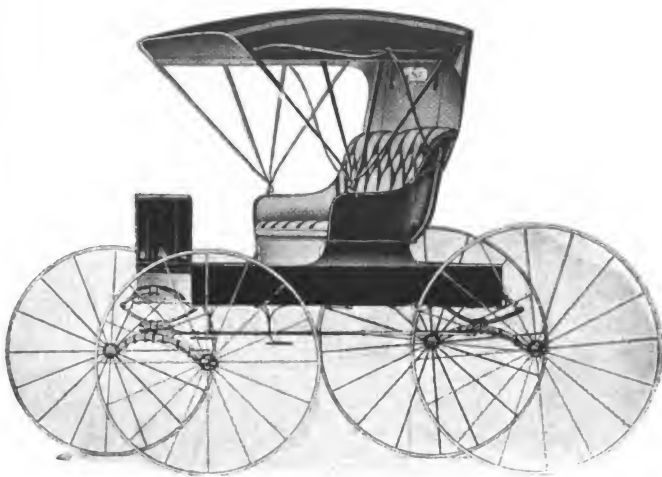
**GERSTENSLAGER CO.**  
Wooster, O.



**W. A. PATERSON CO.**  
Flint, Mich.



**AMES-DEAN CARRIAGE CO.**  
Jackson, Mich.



**KEYS BROS.**  
Council Bluffs, Ia.



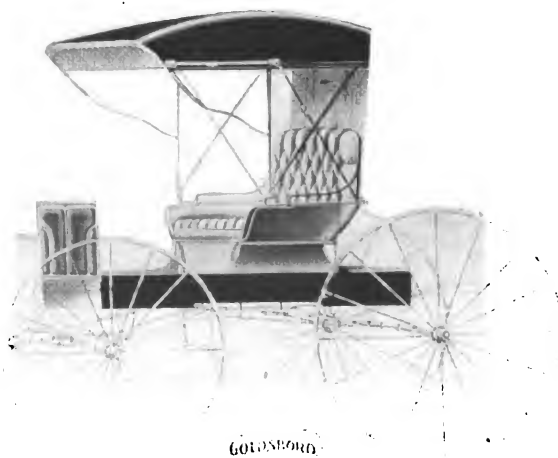
**KEYS BROS.**  
Council Bluffs, Ia.



**GOLDSBORO BUGGY CO.**  
Goldsboro, N. C.



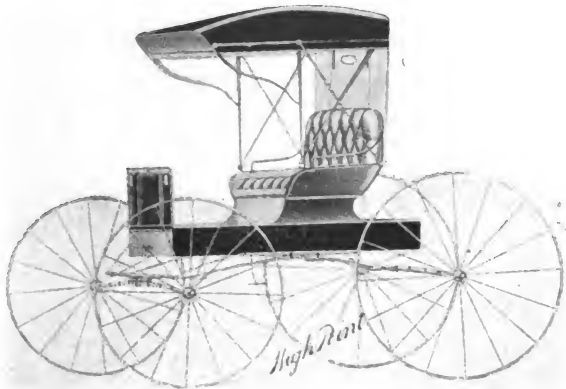
**ANCHOR BUGGY CO.**  
Cincinnati, O.



**GOLDSBORO BUGGY CO.**  
Goldsboro, N. C.



**EXCELSIOR CARRIAGE CO.**  
Watertown, N. Y.



**HIGH POINT BUGGY CO.**  
High Point, N. C.



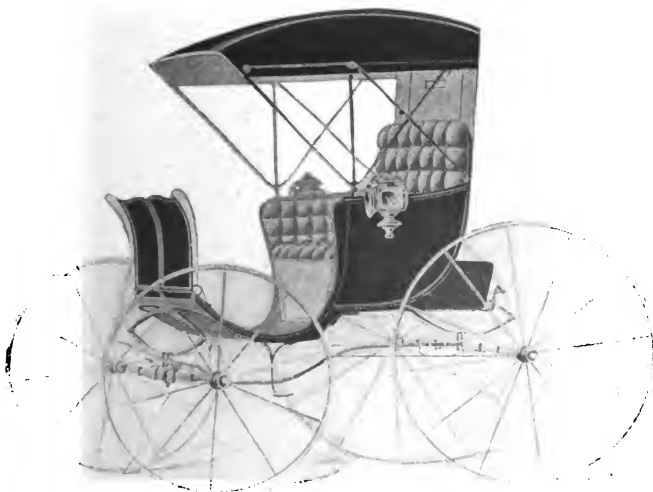
**SAYERS & SCOVILL CO.**  
Cincinnati, O.



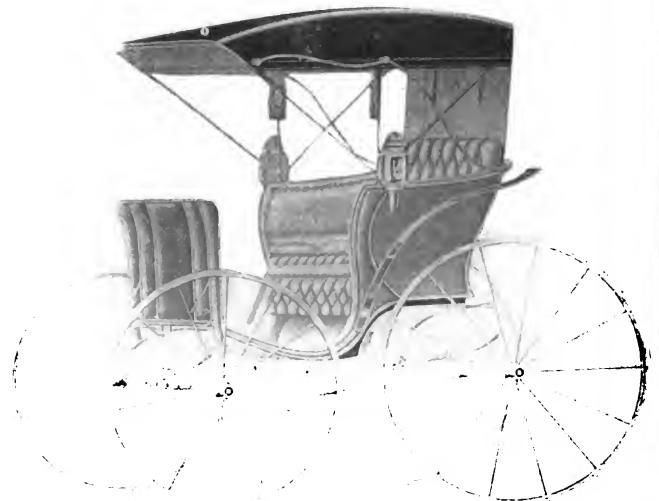
**STUDEBAKER CORPORATION**  
South Bend, Ind.



**W. A. PATERSON CO.**  
Flint, Mich.



**WM. N. BROCKWAY**  
Homer, N. Y.



**SAYERS & SCOVILL CO.**  
Cincinnati, O.





JOHN DEERE PLOW CO.  
St. Louis, Mo.



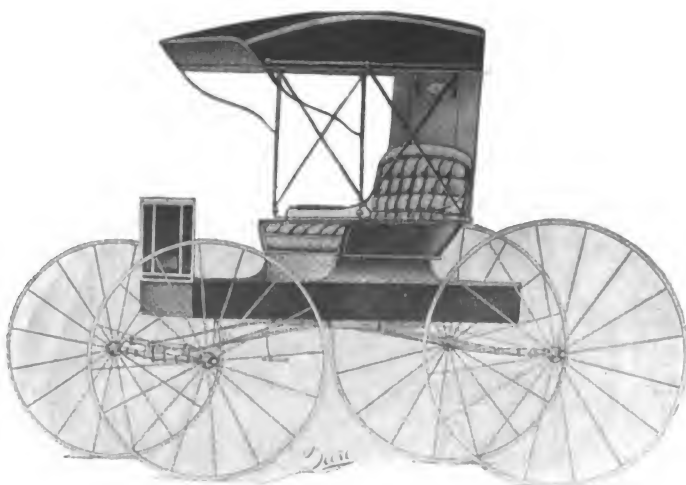
STUDEBAKER CORPORATION  
South Bend, Ind.



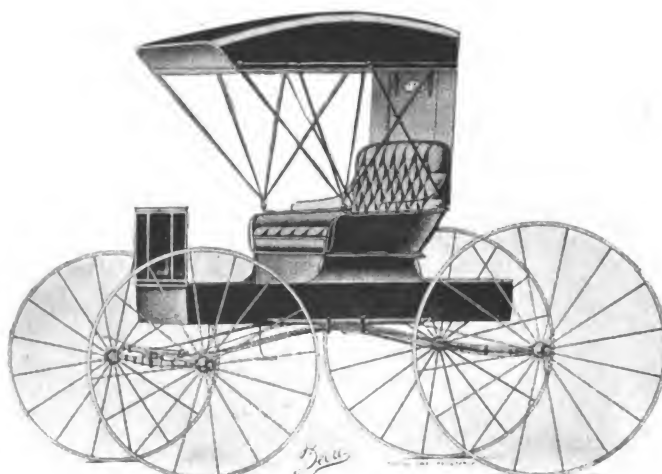
JOHN DEERE PLOW CO.  
St. Louis, Mo.



JOHN DEERE PLOW CO.  
St. Louis, Mo.



JOHN DEERE PLOW CO.  
St. Louis, Mo.



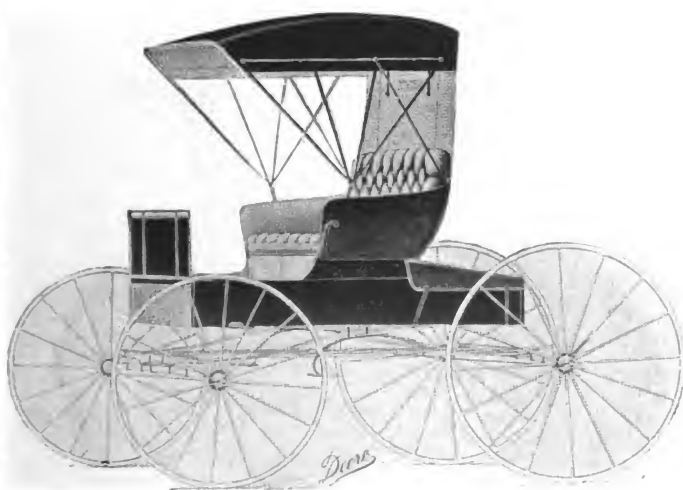
JOHN DEERE PLOW CO.  
St. Louis, Mo.



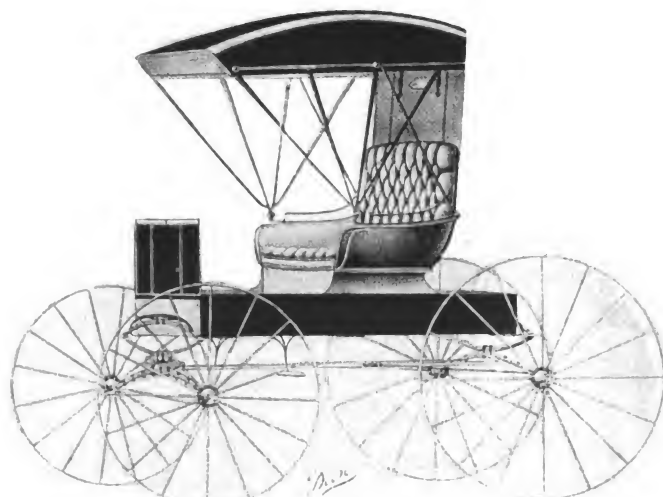
**JOHN DEERE PLOW CO.**  
St. Louis, Mo.



**ZIMMERMAN MANUFACTURING CO.**  
Auburn, Ind.



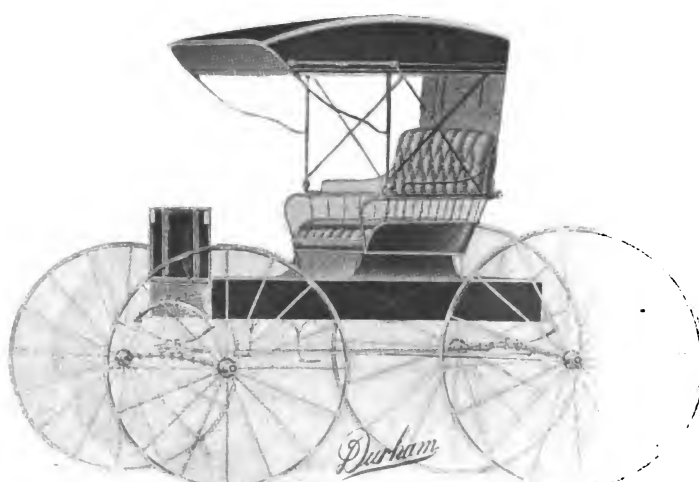
**JOHN DEERE PLOW CO.**  
St. Louis, Mo.



**JOHN DEERE PLOW CO.**  
St. Louis, Mo.



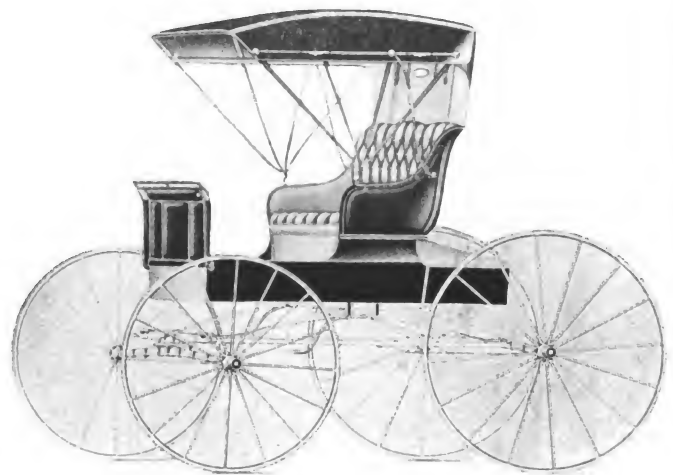
**LA PORTE CARRIAGE CO.**  
La Porte, Ind.



**DURHAM BUGGY CO.**  
Durham, N. C.



**JOHN DEERE PLOVER CO.**  
St. Louis, Mo.



**PARRY MANUFACTURING CO.**  
Indianapolis, Ind.

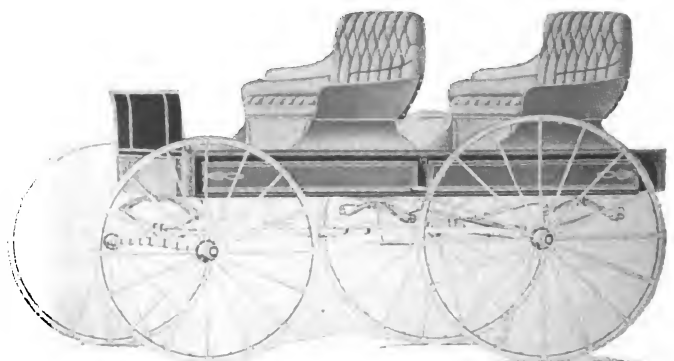


**ANCHOR BUGGY CO.**  
Cincinnati, O.



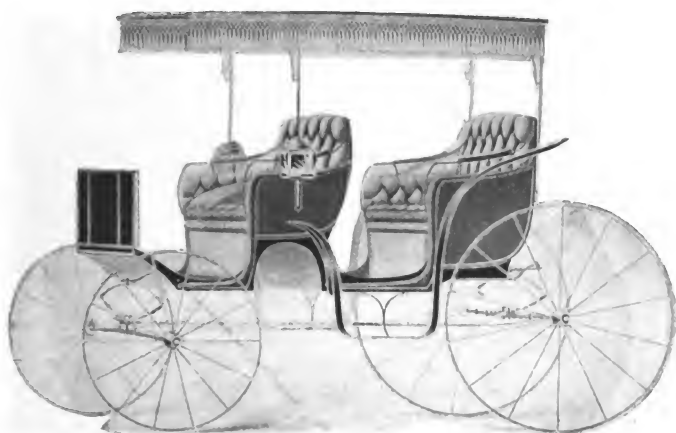
**PARRY MANUFACTURING CO.**  
Indianapolis, Ind.

## SPRING WAGON

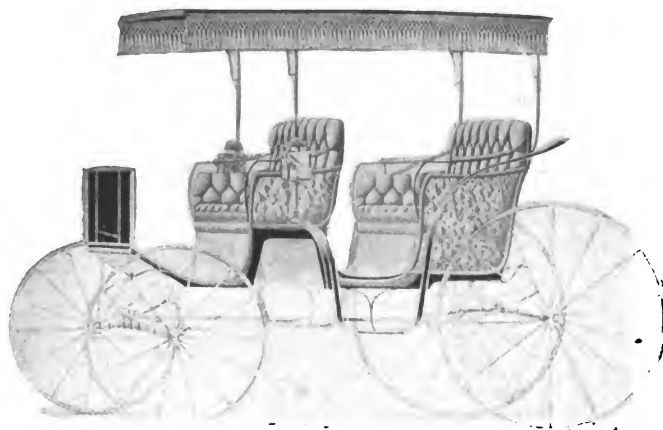


**PARRY MANUFACTURING CO.**  
Indianapolis, Ind.

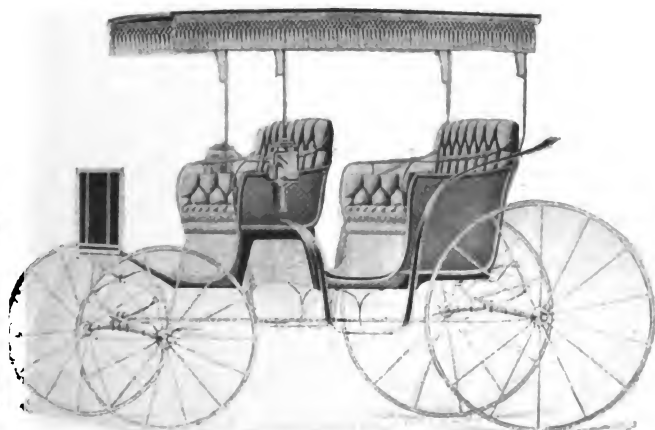
# SURREYS



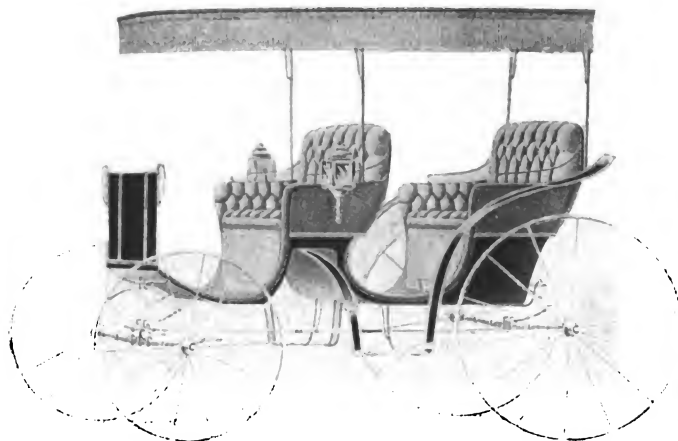
**WM. N. BROCKWAY**  
Homer, N. Y.



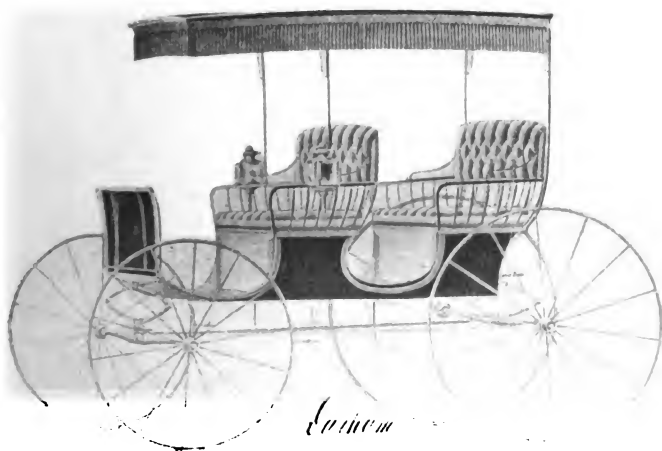
**WM. N. BROCKWAY**  
Homer, N. Y.



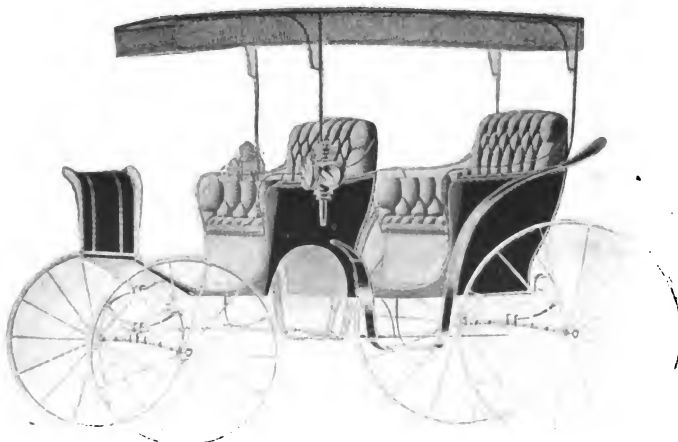
**WM. N. BROCKWAY**  
Homer, N. Y.



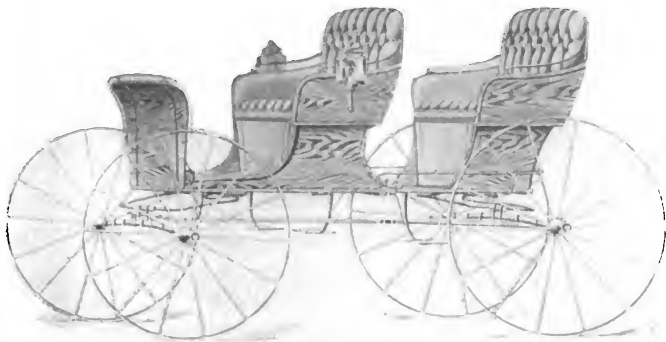
**AMES-DEAN CARRIAGE CO.**  
Jackson, Mich.



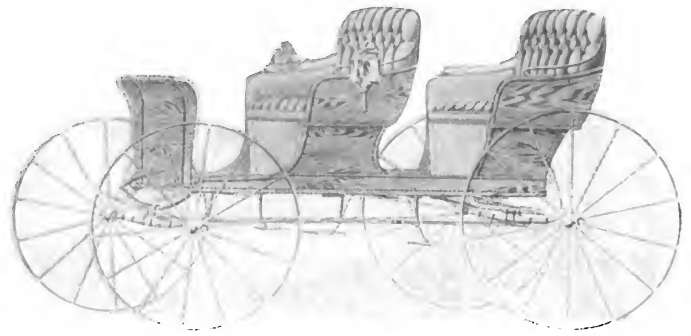
**DURHAM BUGGY CO.**  
Durham, N. C.



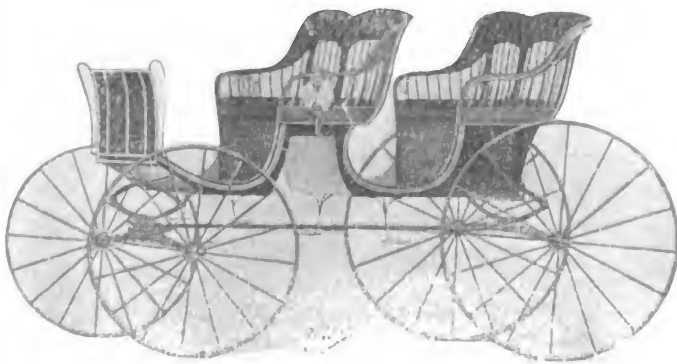
**WM. N. BROCKWAY**  
Homer, N. Y.



**AMES-DEAN CARRIAGE CO.**  
Jackson, Mich.



**AMES-DEAN CARRIAGE CO.**  
Jackson, Mich.



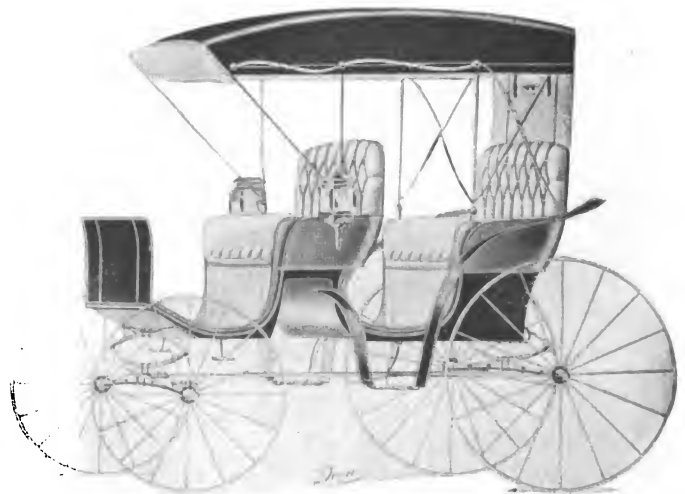
**H. H. BABCOCK CO.**  
Watertown, N. Y.



**JOHN DEERE PLOW CO.**  
St. Louis, Mo.

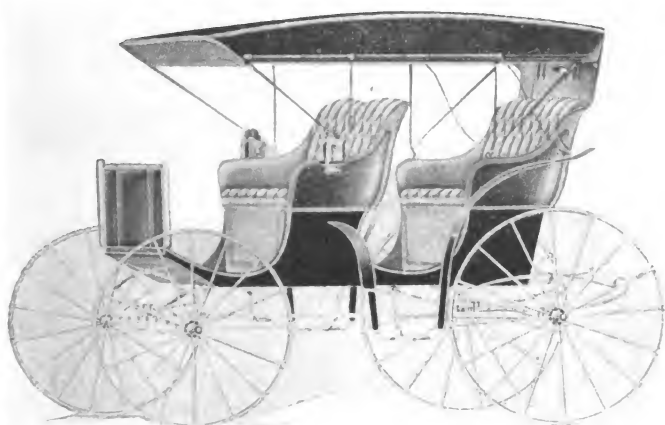


**JOHN DEERE PLOW CO.**  
St. Louis, Mo.

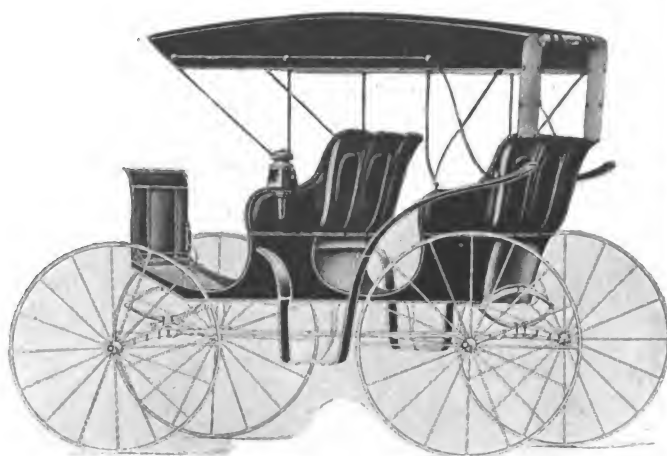


**JOHN DEERE PLOW CO.**  
St. Louis, Mo.



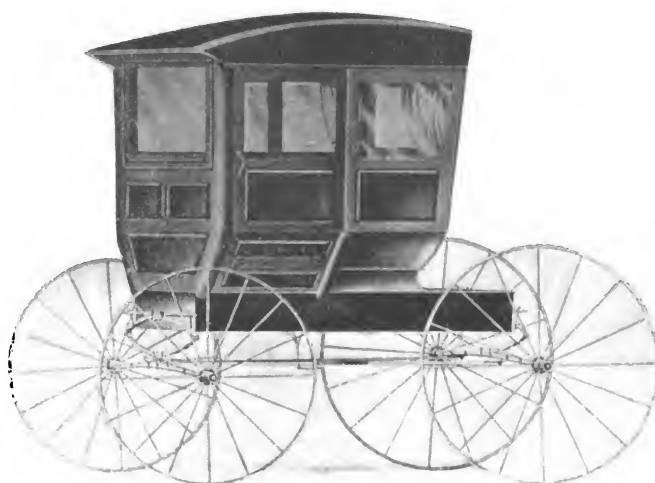


PARRY MANUFACTURING CO.  
Indianapolis, Ind.

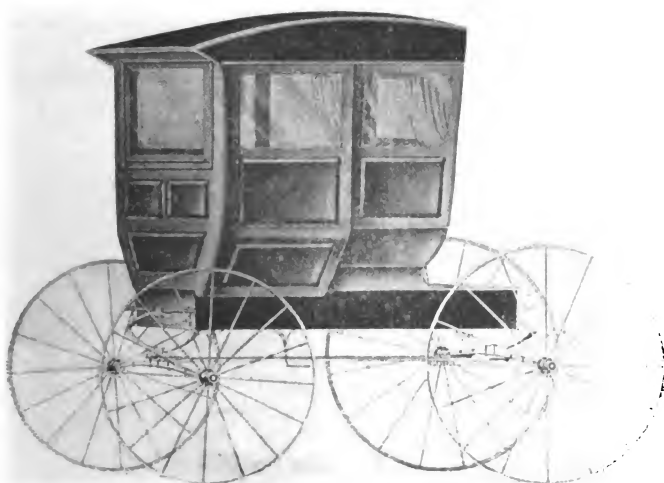


PARRY MANUFACTURING CO.  
Indianapolis, Ind.

### STORM TOP BUGGIES



SEIDEL BUGGY CO.  
Richmond, Ind.

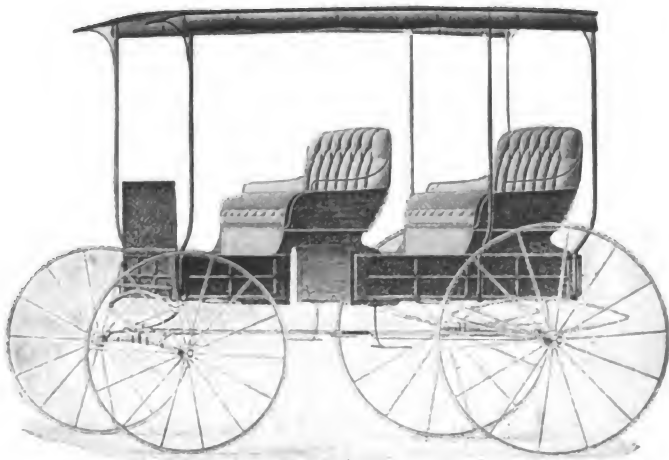


SEIDEL BUGGY CO.  
Richmond, Ind.

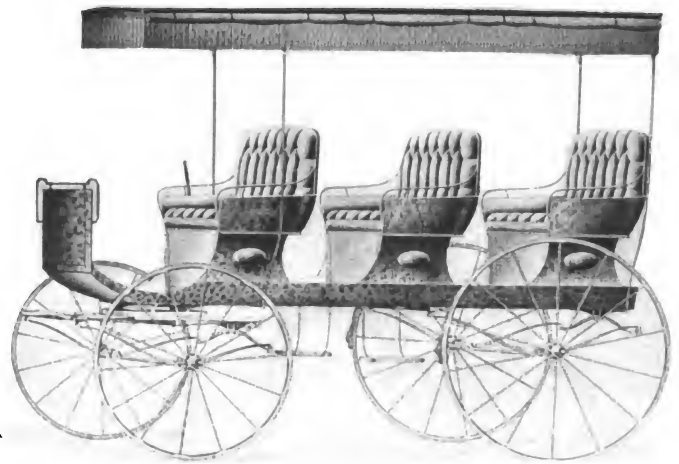


STUDEBAKER CORPORATION  
South Bend, Ind.

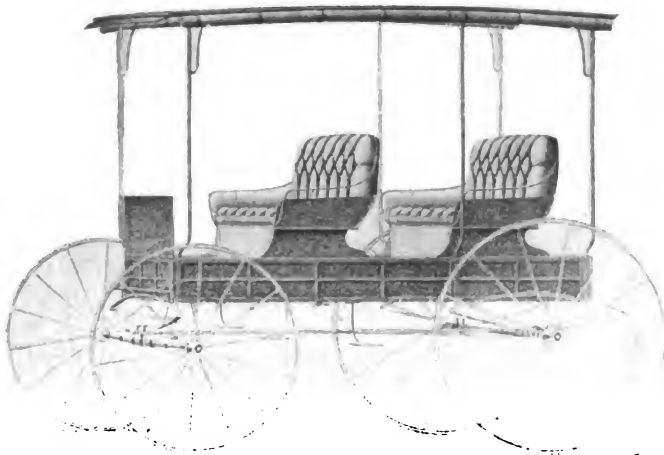
# Depot and Passenger Wagons



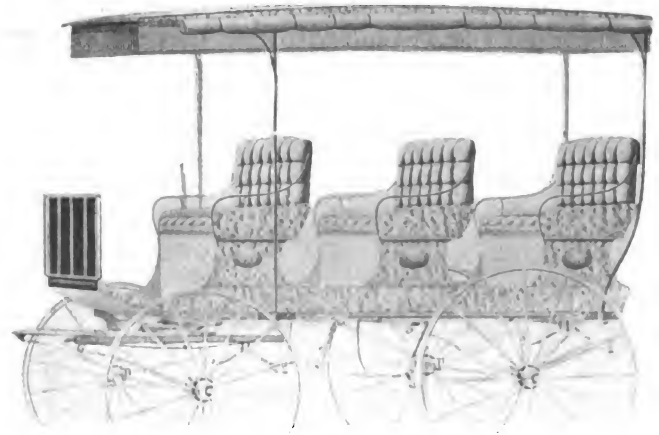
**WM. N. BROCKWAY**  
Homer, N. Y.



**EXCELSIOR CARRIAGE CO.**  
Watertown, N. Y.



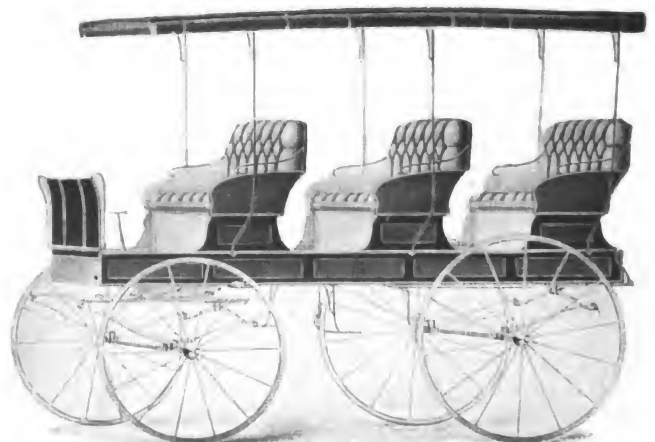
**WM. N. BROCKWAY**  
Homer, N. Y.



**WM. N. BROCKWAY**  
Homer, N. Y.



**H. H. BABCOCK CO.**  
Watertown, N. Y.



**EXCELSIOR CARRIAGE CO.**  
Watertown, N. Y.

# Sleighs



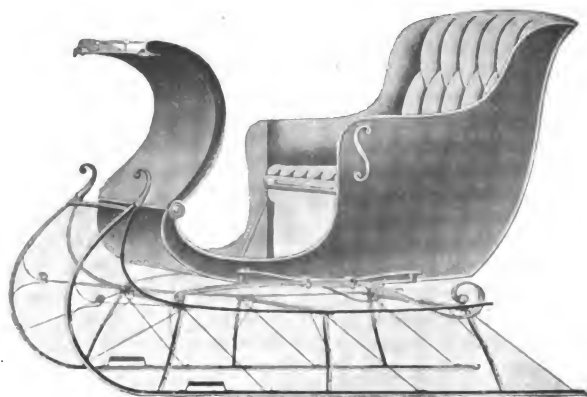
AMES-DEAN CARRIAGE CO.  
Jackson, Mich.



STURTEVANT & LARRABEE,  
Binghamton, N. Y.



STURTEVANT & LARRABEE,  
Binghamton, N. Y.



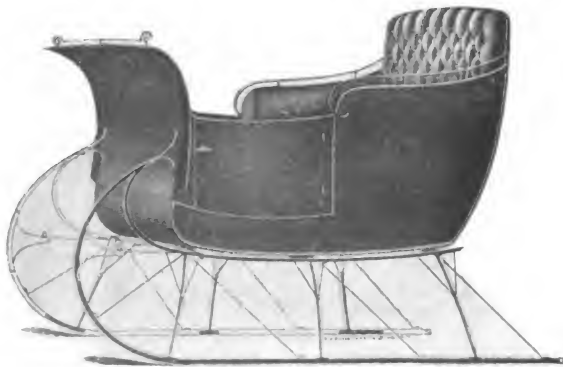
PROUTY & GLASS CARRIAGE CO.  
Wayne, Mich.



STURTEVANT & LARRABEE,  
Binghamton, N. Y.



STURTEVANT & LARRABEE,  
Binghamton, N. Y.



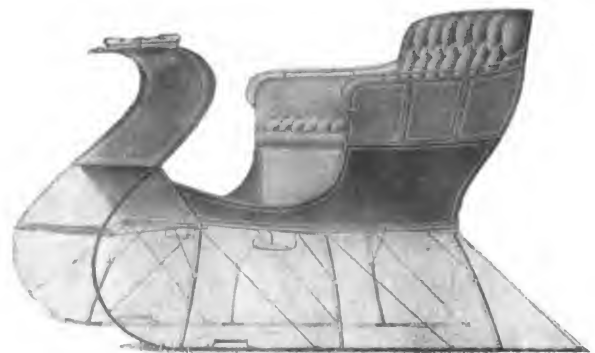
STURTEVANT & LARRABEE.  
Binghamton, N. Y.



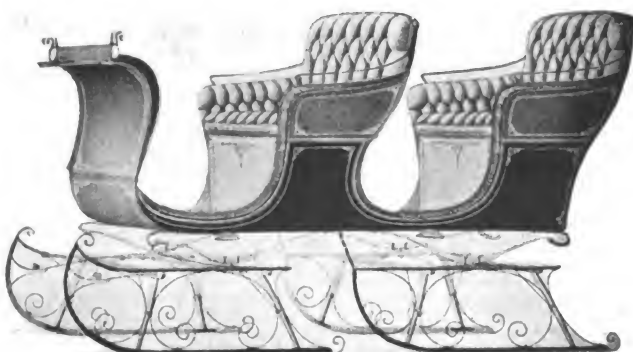
STURTEVANT & LARRABEE.  
Binghamton, N. Y.



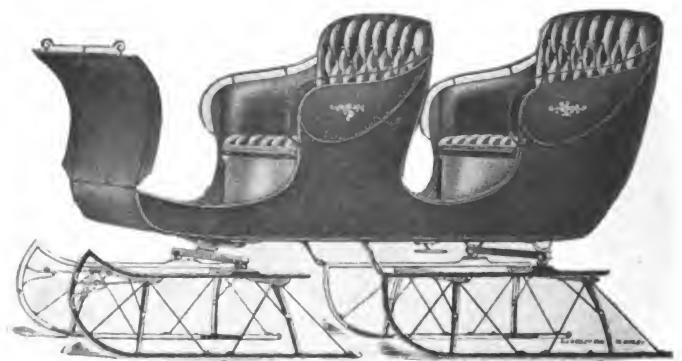
AMES-DEAN CARRIAGE CO.  
Jackson, Mich.



AMES-DEAN CARRIAGE CO.  
Jackson, Mich.



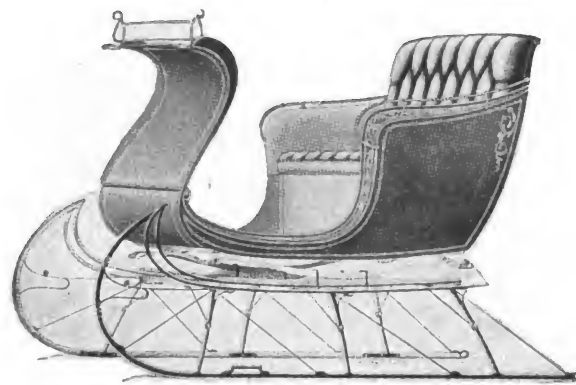
AMES-DEAN CARRIAGE CO.  
Jackson, Mich.



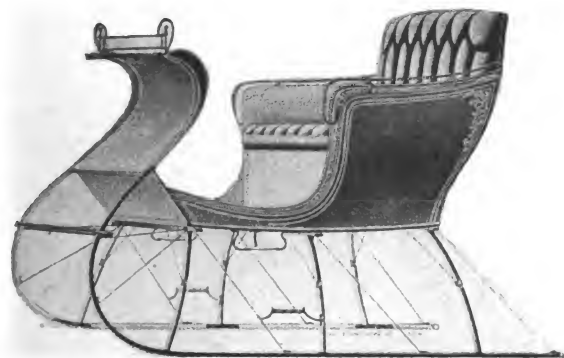
STURTEVANT & LARRABEE,  
Binghamton, N. Y.



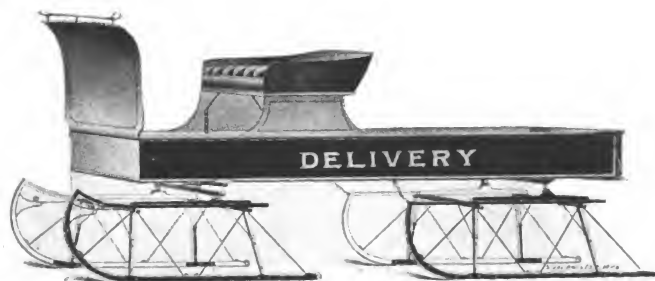
**PROUTY & GLASS CARRIAGE CO.**  
Wayne, Mich.



**AMES-DEAN CARRIAGE CO.**  
Jackson, Mich.



**AMES-DEAN CARRIAGE CO.**  
Jackson, Mich.



**STURTEVANT & LARRABEE,**  
Binghamton, N. Y.



**NORTHWESTERN MANUFACTURING CO.**  
Fort Atkinson, Wis.



**PROUTY & GLASS CARRIAGE CO.**  
Wayne, Mich.



# BUSINESS WAGONS



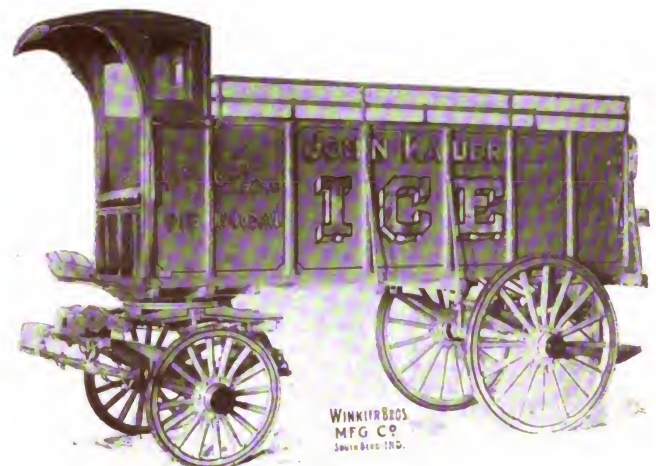
WINKLER BROS. MFG. CO.  
South Bend, Ind.



WINKLER BROS. MFG. CO.  
South Bend, Ind.



WINKLER BROS. MFG. CO.  
South Bend, Ind.



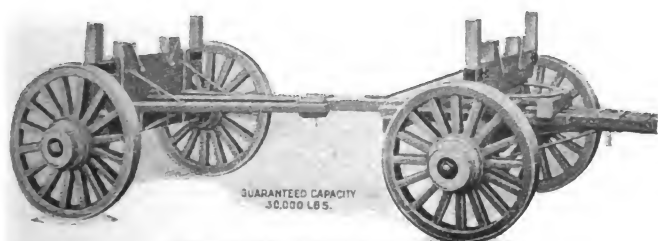
WINKLER BROS. MFG. CO.  
South Bend, Ind.



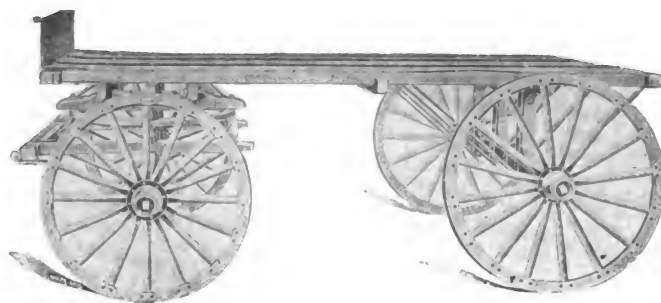
WINKLER BROS. MFG. CO.  
South Bend, Ind.



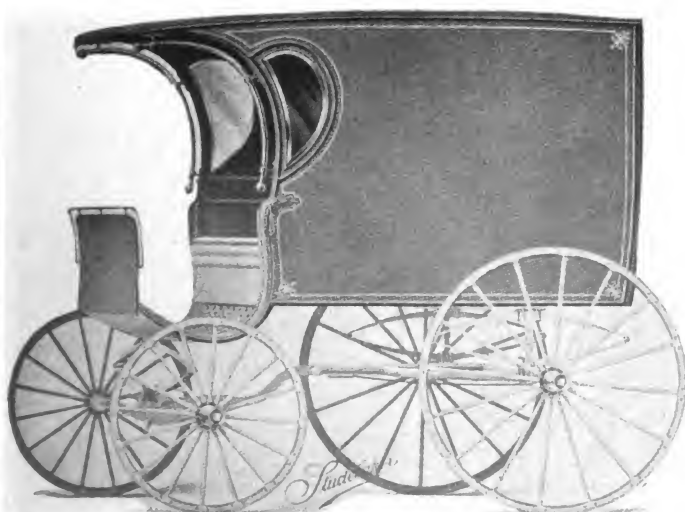
WINKLER BROS. MFG. CO.  
South Bend, Ind.



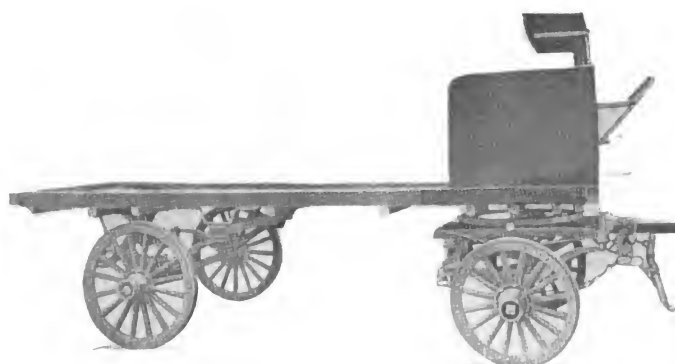
WILLIAMS MANUFACTURING CO.  
Macon, Ga.



WILLIAMS MANUFACTURING CO.  
Macon, Ga.



STUDEBAKER CORPORATION  
South Bend, Ind.



WILLIAMS MANUFACTURING CO.  
Macon, Ga.

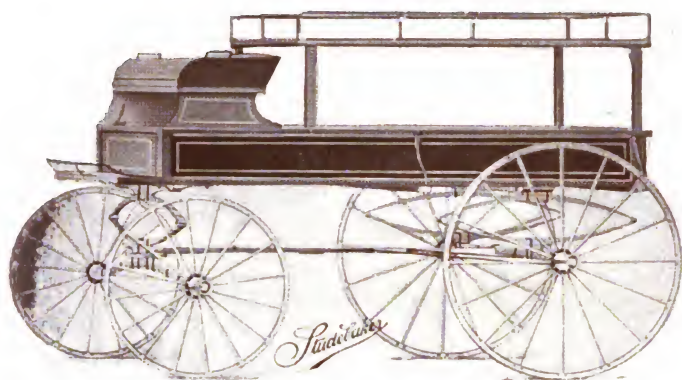


WINKLER BROS. MFG. CO.  
South Bend, Ind.

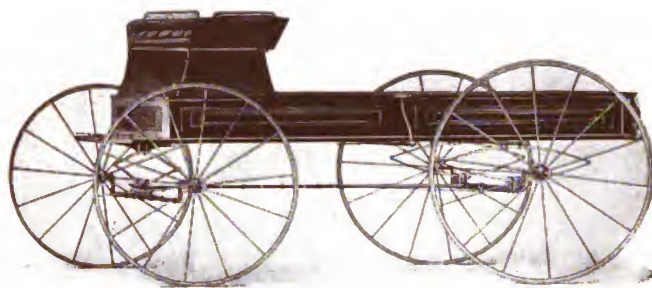


WINKLER BROS. MFG. CO.  
South Bend, Ind.





STUDEBAKER CORPORATION  
South Bend, Ind.



EXCELSIOR CARRIAGE CO.  
Watertown, N. Y.



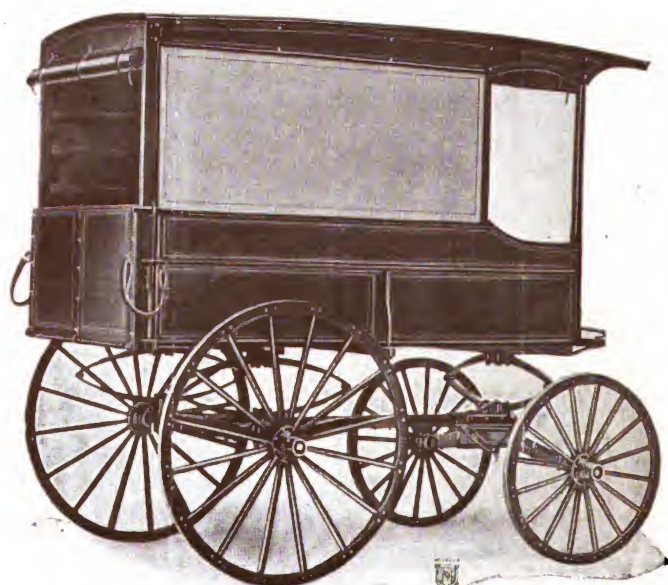
WINKLER BROS. MFG. CO.



MILBURN WAGON WORKS  
Toledo, O.



WINKLER BROS. MFG. CO.  
South Bend, Ind.

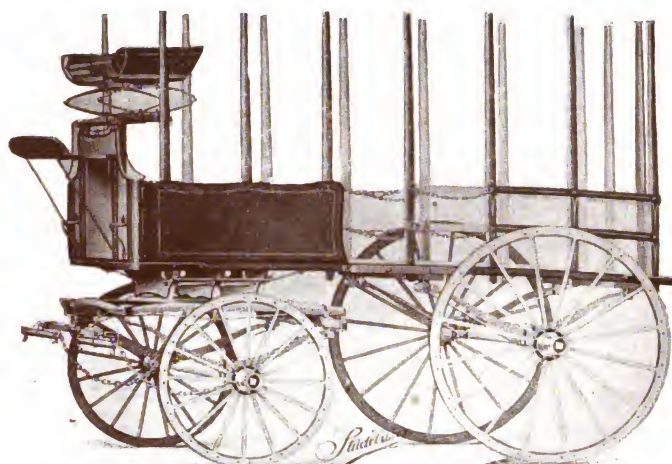


MILBURN WAGON WORKS  
Toledo, O.





WINKLER BROS. MFG. CO.  
South Bend, Ind.



STUDEBAKER CORPORATION  
South Bend, Ind.



WINKLER BROS. MFG. CO.  
South Bend, Ind.



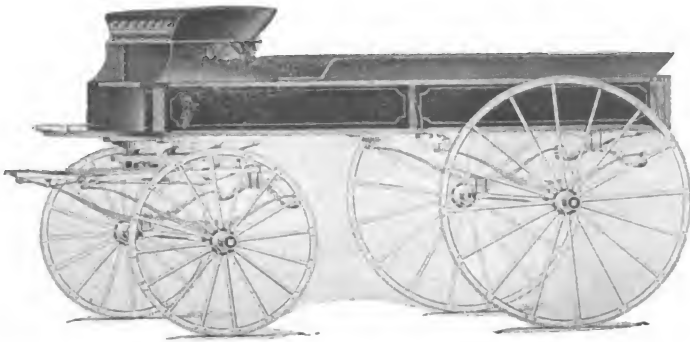
WINKLER BROS. MFG. CO.  
South Bend, Ind.



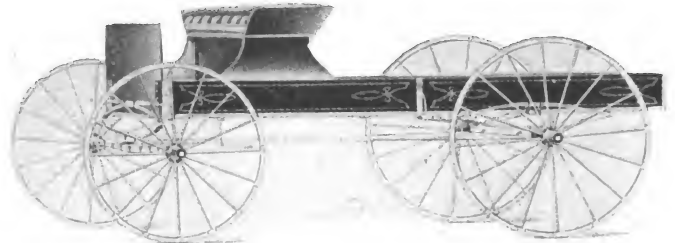
WINKLER BROS. MFG. CO.  
South Bend, Ind.



WINKLER BROS. MFG. CO.  
South Bend, Ind.

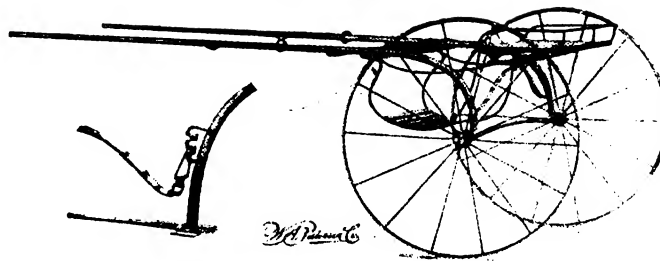


PARRY MANUFACTURING CO.  
Indianapolis, Ind.



PARRY MANUFACTURING CO.  
Indianapolis, Ind.

### SULKY

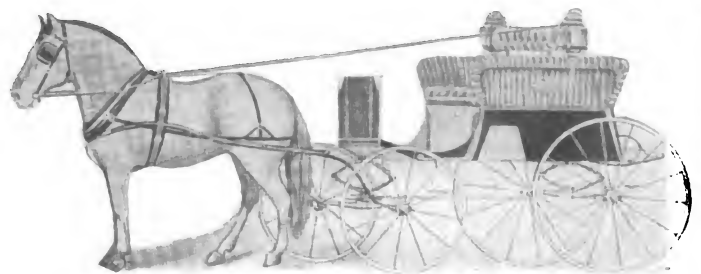


W. A. PATERSON CO.  
Flint, Mich.

### PONY VEHICLES



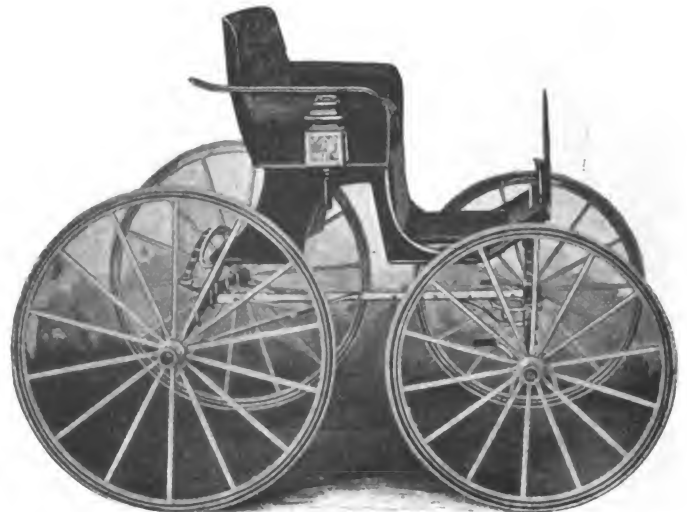
BROOKSHIRE & ROBINSON CO.  
St. Paris, O.



BROOKSHIRE & ROBINSON CO.  
St. Paris, O.



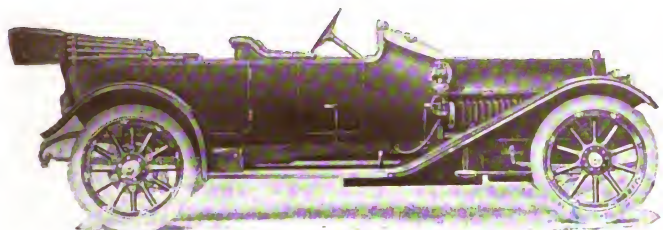
BROOKSHIRE & ROBINSON CO.  
St. Paris, O.



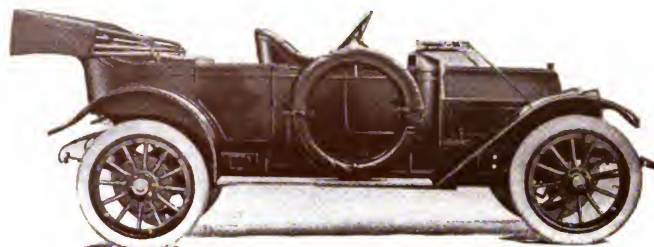
BROOKSHIRE & ROBINSON CO.  
St. Paris, O.



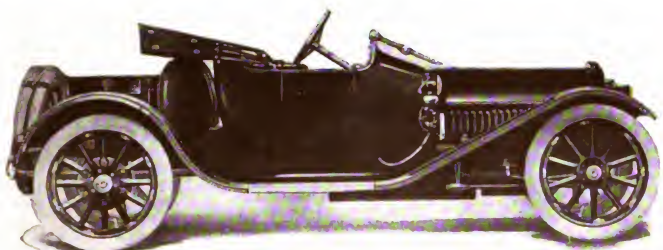
# Gasoline Automobiles



CHALMERS MOTOR CO.  
Detroit, Mich.



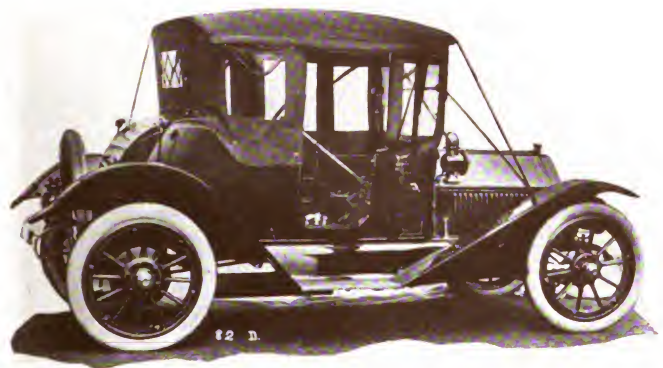
STAVES CARRIAGE CO.  
Chicago, Ills.



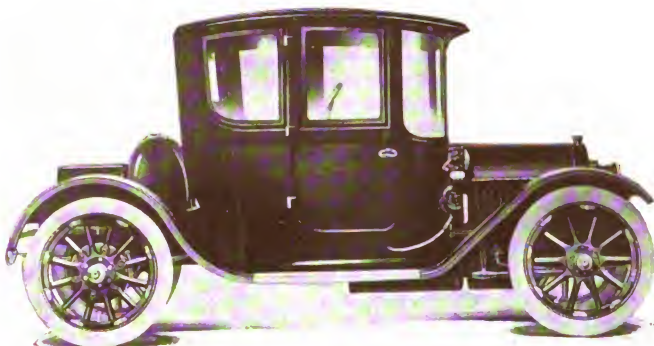
CHALMERS MOTOR CO.  
Detroit, Mich.



CHALMERS MOTOR CO.  
Detroit, Mich.



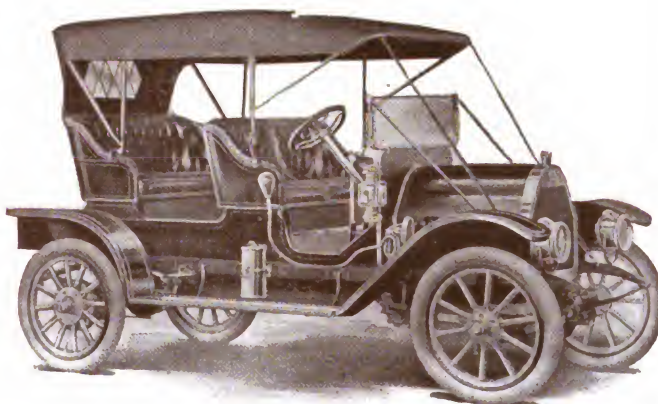
COLUMBUS BUGGY CO.  
Columbus, O.



CHALMERS MOTOR CO.  
Detroit, Mich.



CHALMERS MOTOR CO.  
Detroit, Mich.

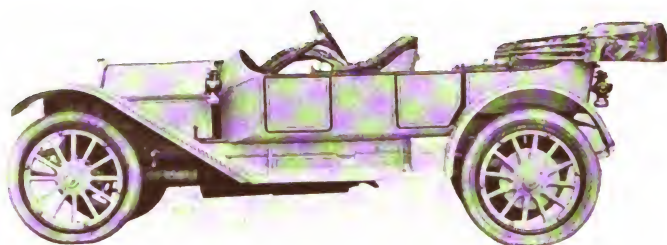


GAYLORD MOTOR CAR CO.  
Gaylord, Mich.

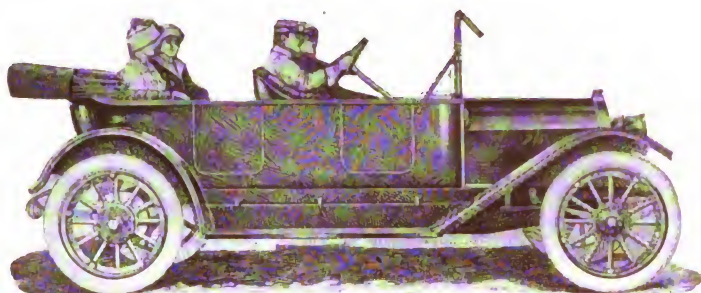




**KNOX AUTOMOBILE CO.**  
Springfield, Mass.



**STAYER CARRIAGE CO.**  
Chicago, Ills.



**GREAT WESTERN AUTOMOBILE CO.**  
Peru, Ind.



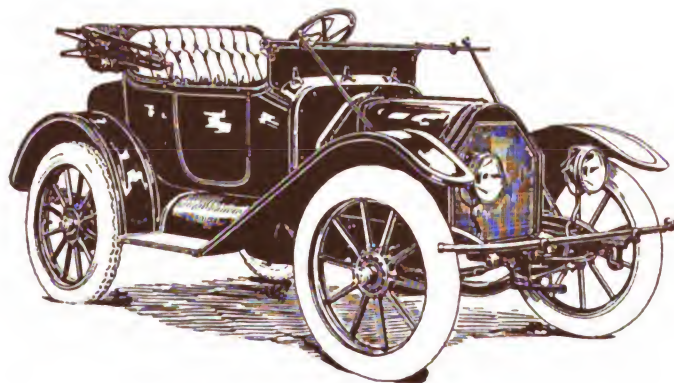
**KNOX AUTOMOBILE CO.**  
Springfield, Mass.



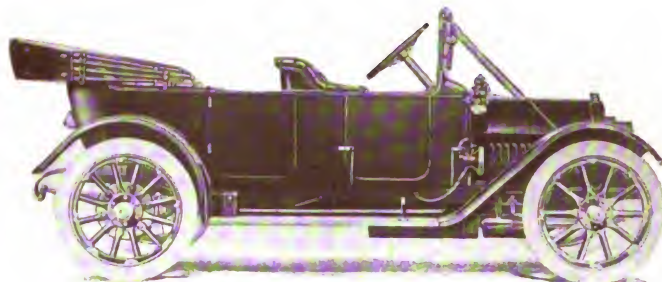
**KNOX AUTOMOBILE CO.**  
Springfield, Mass.



**KNOX AUTOMOBILE CO.**  
Springfield, Mass.



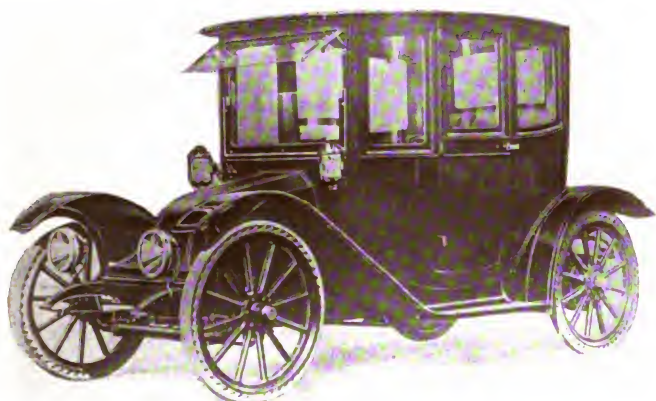
**COLUMBUS BUGGY CO.**  
Columbus, O.



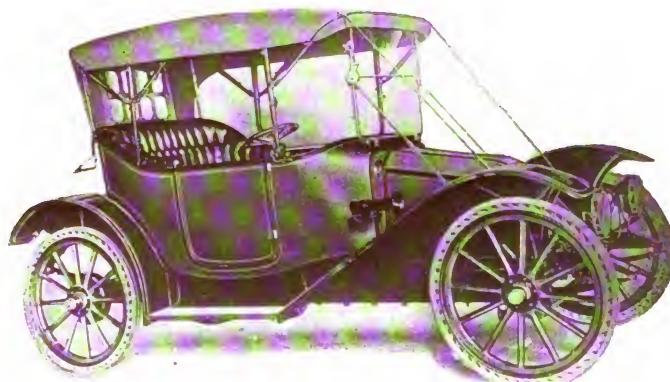
**CHALMERS MOTOR CO.**  
Detroit, Mich.



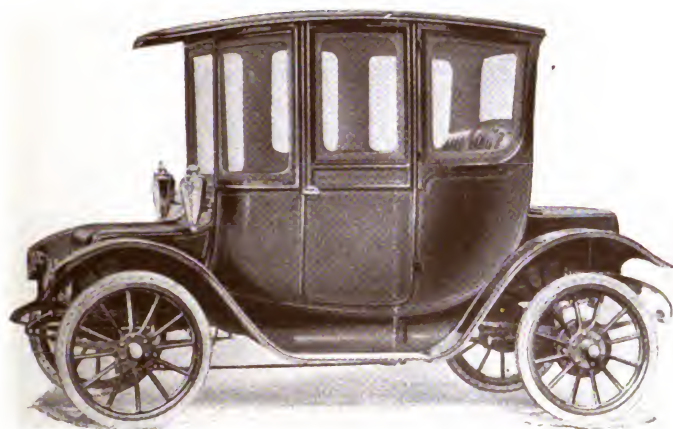
# Electric Automobiles



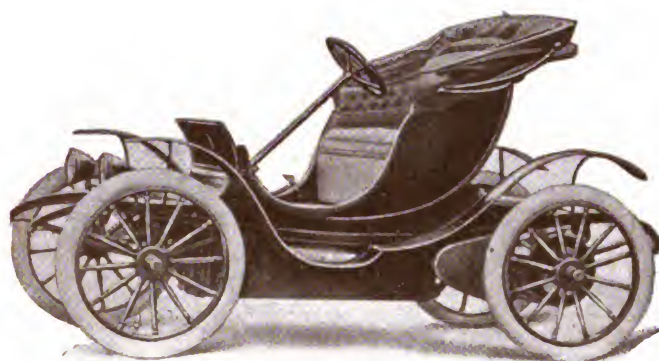
**ARGO ELECTRIC VEHICLE CO.**  
Saginaw, Mich.



**ARGO ELECTRIC VEHICLE CO.**  
Saginaw, Mich.



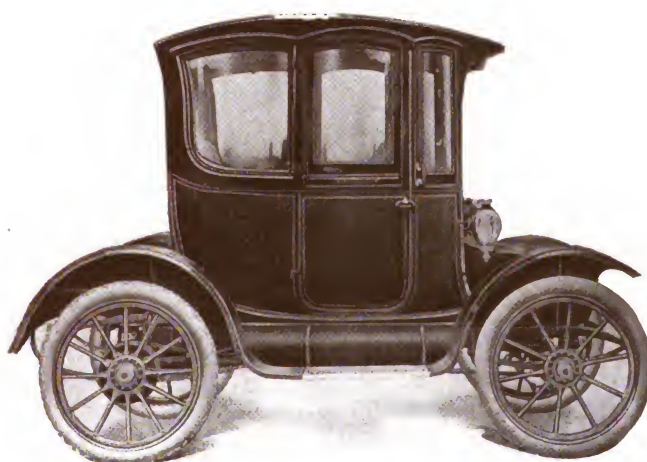
**BROC ELECTRIC VEHICLE CO.**  
Cleveland, O.



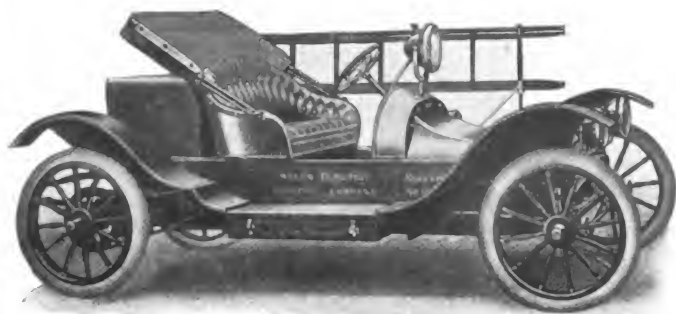
**S. R. BAILEY & CO., INC.**  
Boston, Mass.



**RAUCH & LANG CARRIAGE CO.**  
Cleveland, O.



**COLUMBUS BUGGY CO.**  
Columbus, O.



S. R. BAILEY & CO., INC.  
Boston, Mass.

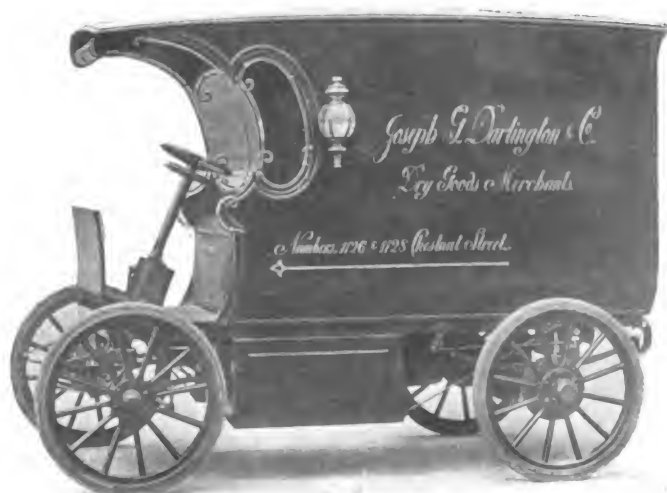


S. R. BAILEY & CO., INC.  
Boston, Mass.

## COMMERCIAL MOTORS—ELECTRIC



COMMERCIAL TRUCK CO. OF AMERICA  
Philadelphia, Pa.



COMMERCIAL TRUCK CO. OF AMERICA  
Philadelphia, Pa.

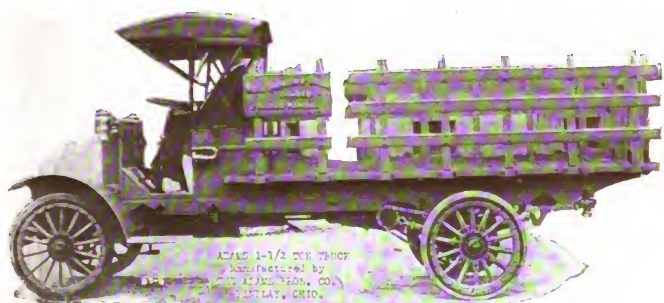


COMMERCIAL TRUCK CO. OF AMERICA  
Philadelphia, Pa.



# COMMERCIAL MOTORS

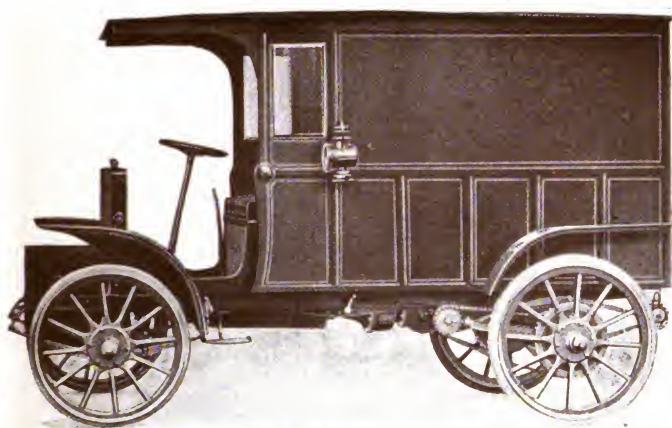
## GASOLINE



**THE ADAMS BROS. CO.**  
Findlay, O.



**HATFIELD AUTO TRUCK CO.**  
Elmira, N. Y.



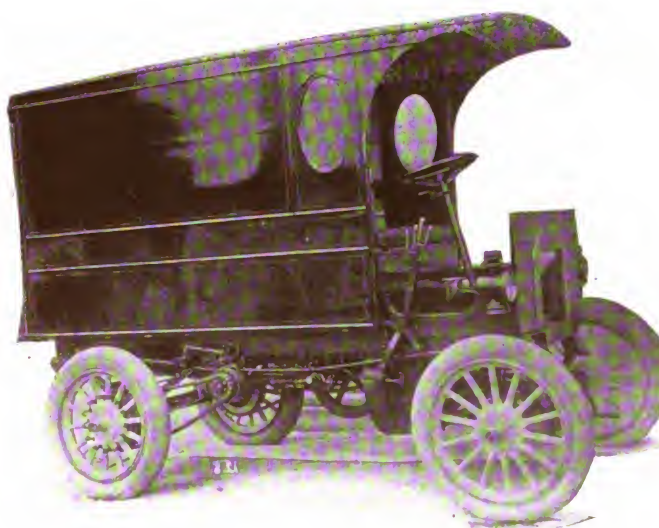
**GENEVA WAGON CO.**  
Geneva, N. Y.



**THE ADAMS BROS. CO.**  
Findlay, O.



**HATFIELD AUTO TRUCK CO.**  
Elmira, N. Y.

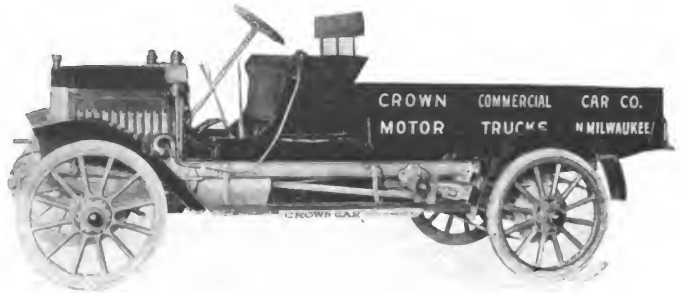


**HATFIELD AUTO TRUCK CO.**  
Elmira, N. Y.





**GENEVA WAGON CO.**  
Geneva, N. Y.



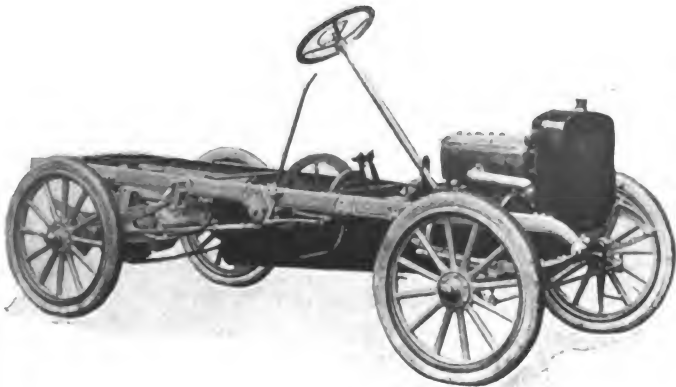
**CROWN COMMERCIAL CAR CO.**  
Milwaukee, Wis.



**VEERAC MOTOR CARRIAGE CO.**  
Anoka, Minn.



**POSS MOTOR CO.**  
Detroit, Mich.



**POSS MOTOR CO.**  
Detroit, Mich.



**VEERAC MOTOR CARRIAGE CO.**  
Anoka, Minn.



**VEERAC MOTOR CARRIAGE CO.**  
Anoka, Minn.



**VEERAC MOTOR CARRIAGE CO.**  
Anoka, Minn.

# DEPARTMENT OF ADVERTISING

Edited by Dundas Henderson

Send your advertising problems here. We will help you with them to the utmost of our resources

Some one has said that you cannot sell vehicles by advertising. I forget who it was made this remark, but I believe that it was the same fellow who insisted on using tallow candles in his house because "them danged new 'lectric lights were no account no how." This gent afterwards went to glory through staying in a cheap New York hotel—he blew the gas out the first night. Tallow candles had got him into the habit you see. He lived one hundred years behind the times.

If people would only realize the exact meaning of advertising they would be more prone to look upon the matter in a sane light. Most merchants consider advertising more in the light of charity or a luxury that can be very well avoided if they can dodge the man who is soliciting some special scheme or medium. While I cannot but admit that some kind of advertising is both charity and luxury I do not commend the man who buys such advertising as a business man.

There are two sides to merchandising, buying (including manufacturing) and selling. Advertising is the more important end of the merchandising problem for it includes all means of selling apart from personal offering of the goods. When you begin to realize all that this implies you will give advertising a new place in your thoughts. The successful selling of your goods means the continuance of your business and if you have the elements of a business man in your makeup you will use every angle of the selling game to make money.

Get this clearly: advertising is probably more necessary to the success of your business than is the buying of your stock and materials or the many other points in your business on which you now spend so much time and attention. You can achieve success through advertising and so get more money to buy and manufacture but no amount of buying and manufacturing will sell your goods unless you use salesmanship in getting rid of them.

Because they have been stung in the past through some scheme that has been masquerading as advertising or because they have spent money foolishly, many vehicle men spurn the idea. They do not understand. If a man were to take some cracker boxes and build three parts of a wagon and then sell that to some blind man as a wagon, would that blind man be justified in condemning the whole vehicle trade when he found out it was not a wagon? It is the same with advertising.

Some of the largest and most successful concerns on this earth today have been built by advertising—salesmanship outside of the personal selling. Take the mail order houses, for instance, the great competitors of the local wagon trade, how do they get their orders? Through advertising.

Scientific advertising is the greatest single force in the commercial world. And it is the simplest and easiest force to employ to build up a fortune or competence for yourself. No doubt you have often thought what a fine thing it would be if you could divide yourself into several parts and go out amongst prospective customers and let each part present your ideas as clearly as you can yourself. You would like to have several salesmen, each one as enthusiastic and energetic as yourself. Advertising shows you the way to do this.

If you advertise in the right way you have the greatest selling force the world ever produced and you have as much chance of getting results from it as the wealthiest corporation or your biggest competitor. It is doing it the right way that matters.

It is the intention of this department to point out the right

way, to show how it should be done so that you can reap the greatest results from the least expenditure.

In future issues we are going to deal in an intimate way with the great fundamentals of all advertising for the vehicle trade:

1. The percentage of income you should spend to get results.
2. How you should spend your appropriation.
3. What you must avoid.

While we are discussing those points we will also help you with your advertising problems. For that reason we want you to send us all your new advertising literature, catalogues, newspaper ads, etc., so that we may discuss them together for the common good.

## THE CATALOGUE SEASON

The proximity of New Year brings thoughts of catalogues. From the few dummies I have been privileged to see there would appear to be an effort this year to make the covers extra attractive. I think, however, that the body of the books could be greatly improved. I still believe that most of the trade catalogues are not instructive enough and the public or consumer catalogues not interesting enough.

Few of the summer catalogues have any human interest in them. They are full of mechanical pictures and precise descriptions. While a full and complete description and a strong idea of value is necessary in appealing to the vehicle buyer, yet it is being found in other lines of a kindred nature that human interest pictures and appealing descriptions will often turn the scale in selling. Note the new catalogues being got out by the mail order houses. And also note the new style of advertising being used by the automobile houses. In all of them there is a human interest appeal. The new automobile advertising does away with a lot of the mechanical detail in the illustrations and introduces "atmosphere."

The strongest appeal to the vehicle buyer in an ad is value and service, but things have got so by means of standardization and competition that there is little to choose in value and service between the various makes. Here is where human interest can get in its fine work. Appeal to the buyer's emotions. More sales are made by an appeal to the emotions than the average man thinks.

I will deal with this important matter a little later, but meantime, while you are thinking about catalogues it is worth while considering that to get ahead of the other fellow you have this strong weapon. If you want to know more about it meantime, write me personally, sending me an outline of your new catalogue and a copy of your last one.

## OLD, BUT STILL GOOD

The discovery has been made in an Egyptian tomb which had not been disturbed since the age of the eighteenth dynasty of a pleasure chariot with its six spoked wheels still covered by their wood tires. The chariot is broad enough to hold two persons, is richly painted and encrusted with gold. The leather work belonging to it is said to be as fresh as when made, affording proof that the leather manufacturers of ancient Egypt knew their business.

## OFFICIAL ANNOUNCEMENT TECHNICAL SCHOOL 1911-1912

The classes in carriage and automobile drafting and construction, carried on under the auspices of the Carriage Builders' National Association, will open on September 25 at 20 W. 44th street, New York City. Autumn term closes at Christmas. Winter term opens on January 3 and closes April 8, 1912.

### Requirements for Admission to the Day or Evening Classes

1. The applicant must be engaged in the manufacture of pleasure or business vehicles.

2. He must be sixteen years of age or more.

3. Be able to speak, read and write English, and to write a fairly good business letter.

4. Have a knowledge of arithmetic, sufficient to solve problems in proportion, and also in square root.

Some knowledge of geometry is also desirable, but it is not required on entering.

Examinations for admission will take place the two weeks preceding the opening of the term; or at such time as may be arranged, to accommodate distant pupils.

### Day Class

This class is to accommodate pupils who wish to devote their whole time to the study of carriage drafting. This class will meet each week day except Saturday during the term. Hours, 9.30 a. m. to 4.30 p. m. Instruction is free.

### Evening Classes

Monday, Wednesday and Friday from 7.30 to 9.30 o'clock. Instruction is free.

### Courses of Instruction

The pupils will be divided into three distinct classes, namely: the "Introductory or Free-Hand Class," the "Class for the study of Carriage Geometry," and the "Class for Scale and Full-Size Working Drawings," and the following gives a general outline of the proposed studies: I. Linear Designing, including free-hand, scale, perspective, colored and full-size drawing. II. Geometry applied to Carriage Construction, including the principles of the so-called "French Rule." III. Carriage and Automobile Body Making. IV. Construction of Carriage Gears. V. Principles involved in the Suspension of Carriages.

Early application is necessary as desk room is limited.

At the close of the term "Certificates of Graduation" will be given to such pupils of the day and evening classes as pass the necessary examinations.

No pupil will be entitled to a Certificate of Graduation unless he can pass, in the judgment of the Trustees, a satisfactory examination in all the branches taught.

### Correspondence Department—Managed on the Chautauqua System—Instructor, Mr. Andrew F. Johnson

Instruction will also be given by correspondence to the employes of carriage, wagon and automobile builders and members of the accessory trades, at their homes, by means of the so-called "Chautauqua system."

Three terms are required in order to complete the full course of corresponding lessons, which are 94 in number, as follows:

First Series—Free-hand drawing. Eleven lessons.

Second Series—The use of mathematical instruments and curves, and mode of sketching a carriage. Ten lessons.

Third Series—Geometry applied to carriage construction; projection of points, lines and surfaces, laying out working draft of a phaeton body, and generation of surfaces illustrated on a phaeton. Eight lessons.

Fourth Series—Movements of triangles and lines in space; rules applicable to plane faces illustrated on a trestle, a phaeton pillar, a cabriolet pillar and bottomside of a landau, showing the method of finding the true size and shape of a pattern, and the bevel of shoulders of the cross bars. Thirteen lessons.

Fifth Series—On finding the dihedral angle, or in work-shop

parlance, finding the bevel of the leg of a trestle, phaeton pillar, cabriolet pillar, and landau bottomsides. Six lessons.

Sixth Series—On the choice and disposition of joints. Three lessons.

Seventh Series—General dimensions applicable to vehicles, and laying out working drawings of a phaeton body and gearings. Five lessons.

Eighth Series—Laying out square and round-cornered stick seats, and round-paneled seats; generation of double-curved surfaces, illustrated by a barouche with round bottomsides, including the study of different forms of bodies, such as drop-center landaus, and broughams with ogee turn-under; ogee front-quarter, bottomsides of coaches and barouches; cheat line, and proportional triangle illustrated on a Clarence body and on a C-pillar back-quarter. Twenty-four lessons.

Extra Series—The draught of vehicles and division of weight, displacement of center of gravity, and objectionable modes of suspension. Four lessons. Miscellaneous subjects—New methods of determining the cheat line, and studits in the development of surfaces, etc. Ten lessons.

On the receipt of tuition fee, all lesson papers for the term will be mailed to the pupil at once, in order that he can see to what the lessons are tending, and any pupil who has finished the study of the full term of lessons will, by sending tuition fee for the next term to the instructor, receive the whole number of lessons for that term.

Written examinations will be required at the end of each series of lessons in order to test the progress and proficiency of pupils, and, at the close of the course, diplomas will be awarded to those deserving such recognition.

All employes of manufacturers of carriages, wagons and automobiles and the trades accessory thereto, doing business within the United States and Canada are eligible to membership in these classes of "Corresponding Pupils," the only condition of entrance being: first, a letter of recommendation from the employer; and second, the remittance in advance, by post-office money order of \$5, which will cover all fees for instruction during one term.

All communications relating to the carriage builders' classes should be addressed to Andrew F. Johnson, Instructor-in-Chief.

## TO PITTSBURGH BY THE PIKE

State Highway Commissioner Edward M. Bigelow, of Pennsylvania, and his engineers have completed plans for the improvement of the state highway between Philadelphia and Pittsburgh. It is believed the work of the great pike will be completed by August of next year. According to Bigelow, the highway will be the equal of any in the country, with scenery that is unsurpassed by any in the United States. Much of the work is now under way. The road will follow the old pike in its entirety. The job of following the old road is a gigantic and expensive one. There is one seven-mile stretch of sand deposit where macadam will not do. This will be covered with asphalt or amasite.

The plan calls for a great park at the summit of the mountains between Somerset and Bedford counties. This will be known as Grandview. A turntable for automobiles will be made and timber cut so that an unobstructed view for 25 miles through the valleys can be enjoyed by tourists. The road in this vicinity is identical to that of the Forbes road laid out by Gen. George Washington. Where Grandview park is to be located is the spot called "Davie Lewis' Lookout," which, according to history, is the place where Davie Lewis, a highwayman, awaited travelers over the pike to hold them up. It is said that he could see the roadway for 25 miles from this place.

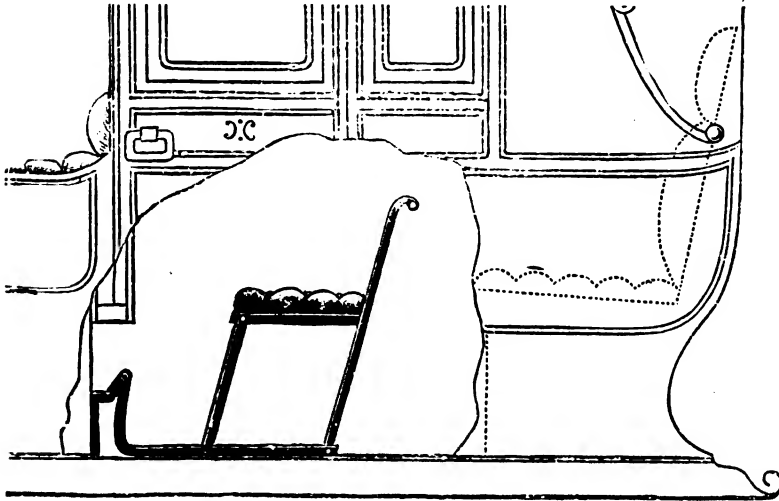
In fifteen years the value of rubber production in American factories has risen from 80 million dollars to over 200 million dollars.

## Spare Seats and Interior Fittings

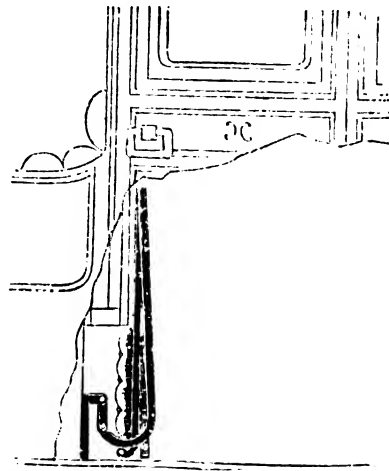
Open the door of a brougham and step inside. If you place your hand by the front of the cushion you will probably find that you can draw out a little cricket (Scotch word meaning a low stool) seat, a small wooden frame with a caned seating. Now if you sold the whole vehicle with this little sliding emergency seat, as well as all the paraphernalia of pole, bar, shafts, and so on, you would then be able to invest in a pair of what the modern traveler considers emergency seats. Instead of

may expect to find that progress has been made in other directions as well, and, if not, then it may be looked upon to develop in due course when the necessary attention is given to it.

The motorist is usually an enthusiastic individual, and is often successful in making his high spirits infectious, which means that those who are not in the happy position of being owners beg for or are pressed to accompany the motorist on his travels. This means that the normal seating capacity is soon overtaxed,



Seat, facing forward, shown up



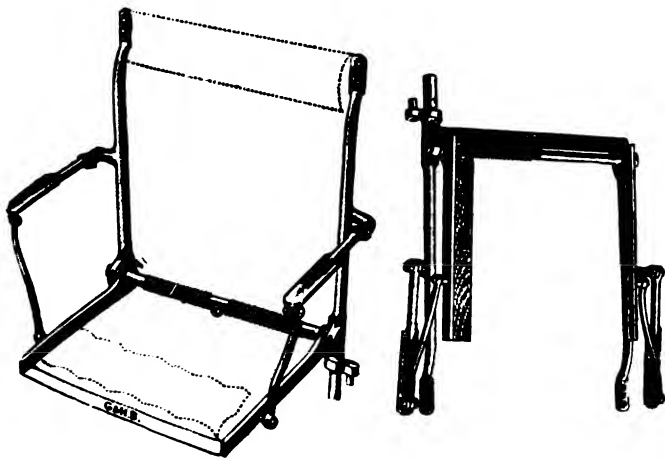
Same seat folded in the front of body

the simple device mentioned above, one is confronted with a highly finished, revolving, swinging, tipping seat, furnished with mechanism so that it can be made to fall in any position, provided with back rest, cushion, and other adjuncts making for comfort, the whole being brightly finished in nickel, and, if needs be, stowed away as completely out of sight as the cricket of former days.

Thus one may gather some idea of the progress which has

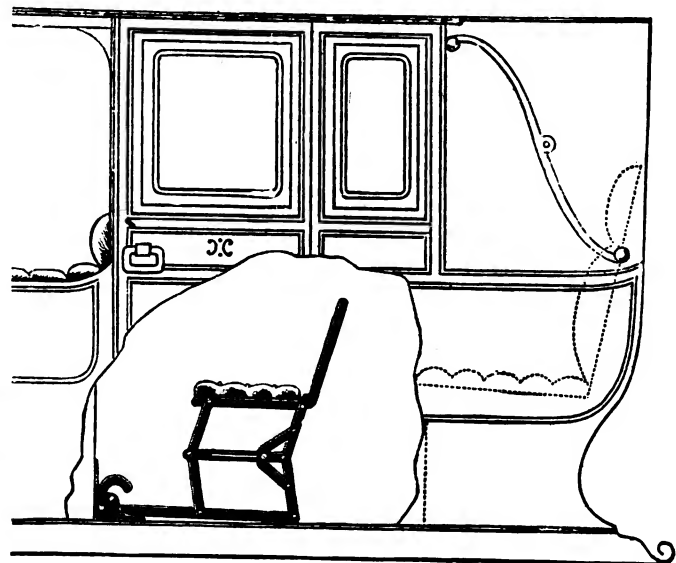
with the result that folding and other seats in many varieties are part of the equipment of almost all cars.

Why not have a fixed seat in the same positions as the emergency seats, some may ask, and so save expense and probably weight as well? Chiefly because the positions occupied are usually seriously in the gangway or doorway, and if



The "Portman" folding detachable seat fittings, shown open and closed.

been made in the design of one vehicle accessory. Whether we should have had such highly ingenious seat fittings placed at our disposal if the motor car had never come on the scene is hardly open to question, and if we can point to so much improvement in the carrying of extra passengers, surely we



Another pattern of seat, No. 700, for use facing forward, also folding compactly to the front

not capable of being put out of the way either completely or partially, it would hamper decidedly the enjoyment of the vehicle.

In a limousine or landaulette the front lining forms a con-

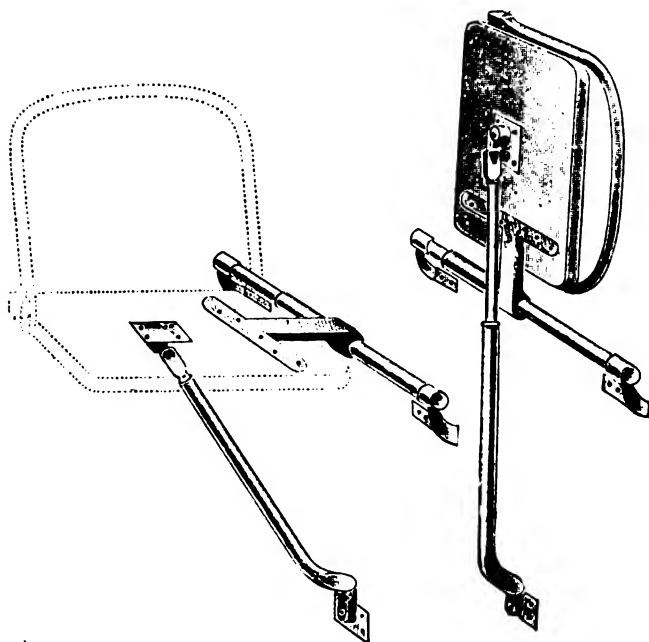
venient flat surface to which may be screwed the seat fittings, and a bar is framed in so as to provide a more substantial fixing than the lining boards would provide themselves.

The simplest type of fitting is the taxicab pattern, which, by the aid of a coiled spring, is automatically thrown upward when the weight of the occupant is removed. What may have been said with regard to the cost of highly-finished seat fittings involving several movements hardly applies in this case.

The taxicab fittings consist merely of a bracket, the part which is directly screwed to the body being provided with a slot in which the end of the arm hinged to the ear of the bracket engages when the seat is down and in use. The hinged arms are made of angle iron, and drilled for the screws, which will hold them to the seat board.

There are many other variations of the lift-up seat, rising in price according to finish and complexity, says *Automobile and Carriage Builders' Journal*, in an illustrated review of English and other designs, which have been incorporated in this article.

Instead of the seat iron engaging in a slot, it may come to rest on a neat stop formed on the ear of the bracket. Again, the irons which directly carry the seat board may be screwed directly to the body, and the other part of the fittings may be of an entirely independent character and forming a strut, so that the seat is supported more scientifically. This strut may be single or in pairs, worked from a fixed center or with one end to slide. Further refinements consist in the addition of a leg or legs at the front of the strut, connected and hinged so as to fold up snugly when required. The usual way for a seat to fold up is for the front edge to rise, so that when out of use the seating surface is protected, but one may also buy fittings in which the back edge of the seat rises and travels

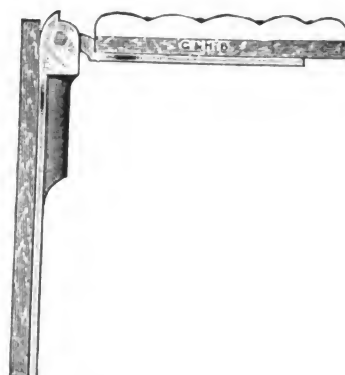


Both sliding and folding arrangement

upward, guided by a pair of parallel channels. In some instances the seat is made to drop downward.

One cannot expect to find a high degree of comfort if the seat is really an emergency one; still, one of the great drawbacks to these smaller resting places is either the absence of a back rest or the obligation to use part of the car which is uncomfortably upright as well as unyielding. For those who care to spend an extra amount, one may have a well-shaped and hinged back rest, and hinged elbows may be provided as well, so that one has on a small scale all the comforts of an armchair.

Although an inclined back seat means that more room is taken up in the body, yet this is not of great moment, as with a tip-up seat the hinged back is mounted so that it can be used



A patented seat which has a spring which holds it both up and down.

with one's back toward the door, which, as a simple precaution, should be fitted with a safety lock, which may now be obtained from most, if not all, of our leading coach ironmongers.

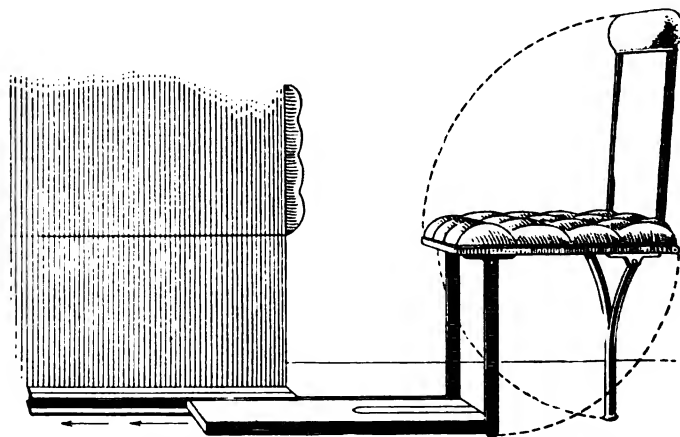
When one comes to analyze the workings of the mechanisms of the various sets of fittings offered to the motor body builder, it is no doubt to be expected that most of them have the leading principle of lifting or hinging upward incorporated. The assistance of a spring seems to be confined to the

simpler patterns, but it is common to use the working of a member past a dead center so as to provide support when the seat is up. If no device of this character is used, then there is a neat clip provided to hold the seat when up.

As an example of a modern tip-up seat, one notes that it has a hinged and trimmed back; it can be revolved as a whole into any position from the centers just in front of the lining boards, while the seat and its back may be swung round and locked independently also. The whole folds up flat when not in use.

The coiled spring, in either a tube or by itself, already a familiar adjunct to the head fittings, is utilized with seat fittings also, so that the helical spring is used both under torsion and compression and extension. The knuckle joint, also, finds a new sphere of activity in locking a seat into position, or keeping a leg or legs in their proper relative position.

Apart from patterns of seats which fold up against, and are more or less hinged to, the front lining boards, there is a large



The "Bee" sliding seat can be used to sit either with the back to or facing driver. It slides under the front seat when not in use

class which are specially designed to face forward, and are pivoted usually to the hind standing pillar. Here one finds many of the same principles adopted as those already described. Folding back and arm rests and seats either to spring or lift up, and to revolve from one or more centers.

With respect, however, to seats hinged from the hind standing pillar, the design and proportions of the motor body itself operate more directly on the amount of convenience which the seat will give. Although there may be plenty of measurement between the front of the main seat and the lining boards, yet one has to consider how much of this is available after the doorway has been deducted. It is seldom that a body is long enough to accommodate an extra seat between the hind standing pillar and the main seat, so that a little license is allowed



in that the emergency seat projects some 3 or 4 inches into the gangway, and often slides are provided so that the seat may be brought yet more forward to give more knee room to the passengers on the main seat while the car is traveling.

It is not usual to strengthen the framing of the body if these pivoted seats are used, but it must be borne in mind that 140 or 150 pounds is not an insignificant strain to put on a pillar and its immediate members, especially as the load is only supported in some cases at one end, and there is not always a directly supporting strut or leg to relieve the strain.

Many patterns of these seats to face forward, however, are now provided with direct supports, which hinge down to take the weight, sometimes automatically dropping into position as the seat is opened or closed.

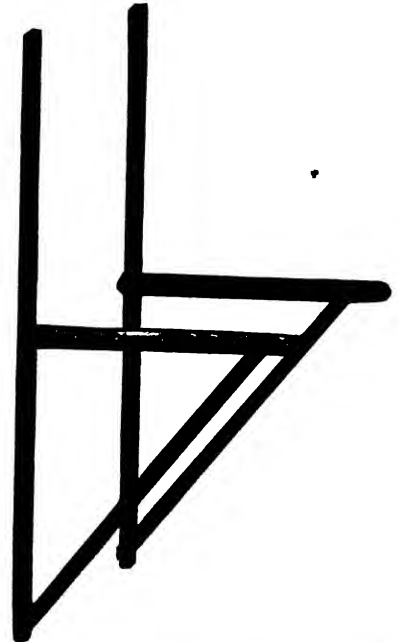
Seats which are pivoted or socketed at the hind standing pillar are often made so that they may be lifted away bodily and dropped into corresponding sockets on the front lining boards, where they have a similar range of operation and adjustment as they do farther back and more to the side. As may be expected, full advantage is taken of these cunning contrivances

fold up in either position, but, of course, it is an advantage for them to be collapsed on the front lining boards, as room is always more valuable across the body than in the direction of its length.

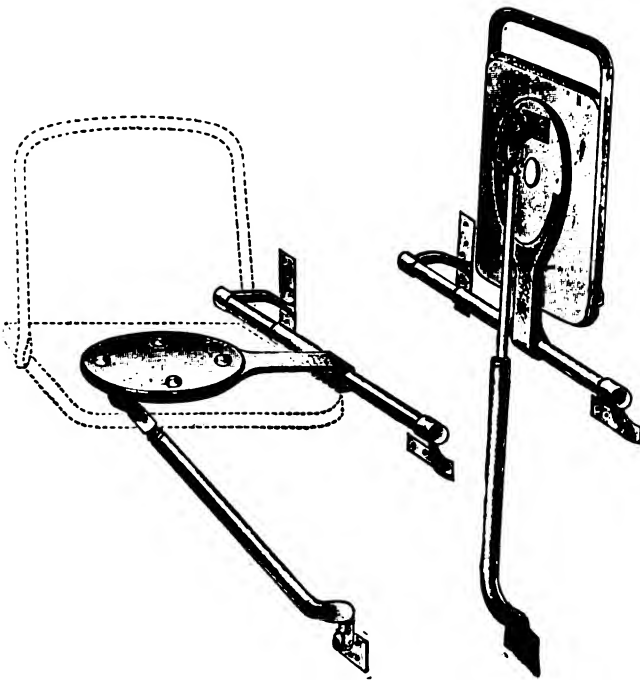
Another development of the extra seat is the portable type, which is a folding chair without any attachment to the body at all. Such a chair can be folded flat against the lining boards when not in use, while the spread of the legs, and the amount of grip between the under surface of the feet and the carpet render it practically immovable when used inside the car. Naturally, such a seat may be taken right out of the car and used for various other purposes, such as waiting for a wary fish to rise, or to save sitting on the ground when one is attending a picnic, and so on indefinitely.

These seats are, of course, made entirely in keeping with the character and general finish of a high class motor body, but the near relationship between such a seat and others of a more domestic character are apt to lead some of an economical turn of mind to compare prices.

The emergency seat in all its countless varieties naturally draws attention to the disadvantages which accrue to the fixed seat. A considerable amount of adverse comment has been showered on the driving seat and the difficulty of various drivers finding an equal amount of comfort when at the wheel. Some



Lift-up seat fitting. Folds up flush with side guides, and is practically concealed when not in use



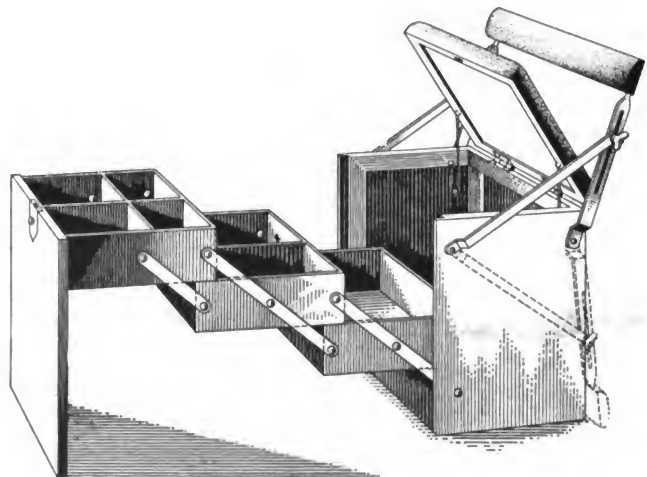
Another example of sliding, folding, and revolving seat

to retain one seat by the pillar, say on the off side, and shift the other to the near side on the lining board.

So far we have regarded seats which are more or less fastened to the body at the seat line. There has been, however, a large fund of ingenuity expended on sets of fittings in which the bottom of a leg or legs is the medium of attachment to the body of the car.

A typical seat of this class has two back legs, which form a continuation of the back rest, which are kept in their proper relationship to the seat frame by means of knuckle joints. Flapped to the front of the seatboard, and in the center, is a third leg, which ends in a ball and socket joint fastened to the floor framing. This allows the chair to be swung into any position from the center of the front leg, and, when it is required to collapse it, the chair is "knelt down," the seat taking up the lower vertical position, while the back legs swing forward with the back rest above and beside the seat. Such a seat has practically a universal position, and one may sit facing forward or backward, or with one's face or back to either door or any intermediate angle.

A seat may also face forward and have the leg hinged to a horizontal floor member, so that the whole collapses and folds up against the front lining boards straight away. Those types which fit into sockets either in front or on the side of the body



The Brooks, a patent combined spare seat and cabinet, with extending drawers

chassis manufacturers offer adjustable steering columns and control levers, but the idea of furnishing a seat which can adapt itself to the rigidity of the steering pillar is sure to find favor, and if it gives comfort to the drivers, why not for the other occupants as well? This idea has been carried out, and now one can buy centrally supported seats which tilt to any angle,

and, for the purpose of the driver, slide backward and forward, and are adjustable as to height also.

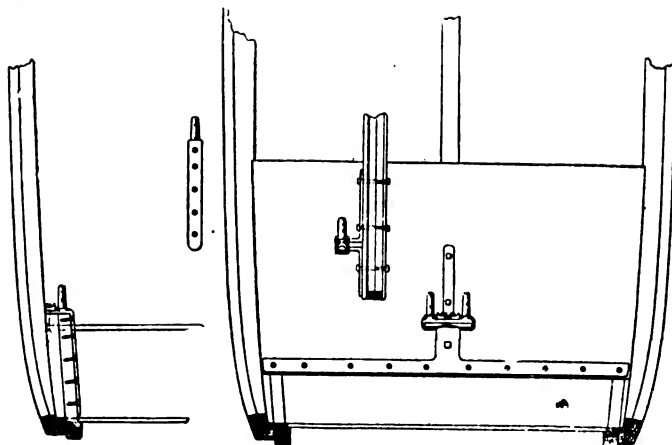
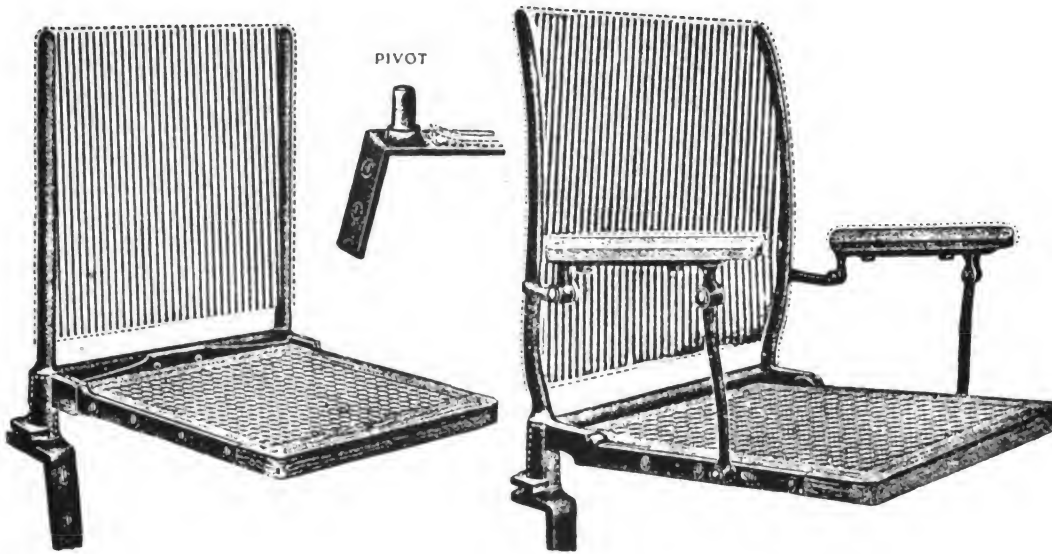
The extra seat is sometimes found in such a position that

the occupant has to place his feet on the running board or long side step.

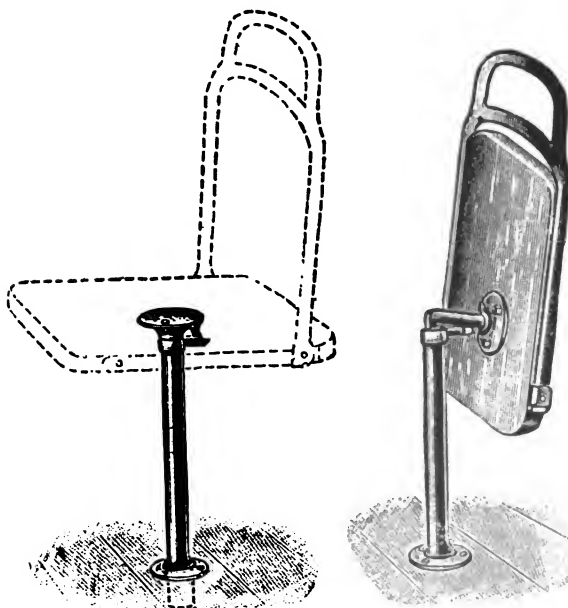
In some cases a small bracket or other seat has been provided, and we note that one firm has utilized the dummy front door by hinging at the bottom with the upper part to turn up for side protection, while there is a folding back rest in addition. A similar idea to this has been carried out by hinging one of the driving seat panels.

A distinct variety of folding seat is the hind seat, as used with the small car. Here the first object in view is to design the apparatus so that the whole will fold neatly out of sight. The simplest arrangement is a seat-board hinged on the front edge with hip irons to fold inward sideways, and a back rest to collapse also, the whole then being reversed into the hind

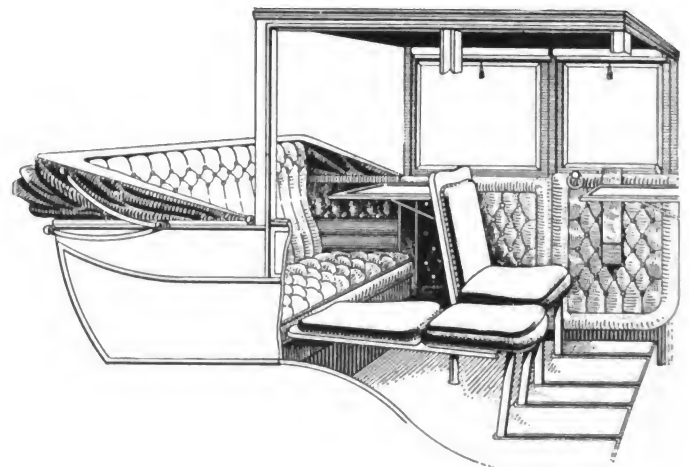
boot or locker. More elaborate devices consist of the seat iron and back rest being hinged together so that by the proper relation of the various centers the whole folds down flat, with the advantage that the whole is immediately opened by one operation, and there is more general comfort in the seat. The notion of a seat to entirely collapse and disappear has been available for some years for the side-entrance phaeton as well. This necessitates a small box or locker being formed in the bottom framing and part of the floor made to form a hinge. Many other patterns of extra seats, however, can be hid from view by shaping a recess in the body to receive them when folded, with or without a fall of some kind to drop over and cover



A folding and detachable seat with and without folding elbow rests and drawing showing how the above seats are fixed to the body



A revolving and folding type



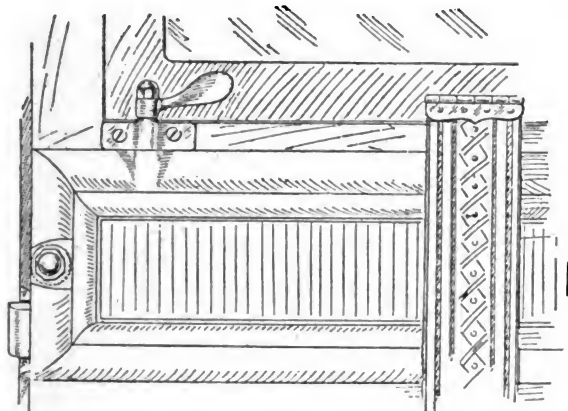
A patent chair-table-couch. Everything fixes itself automatically and the parts fold flat against the front of the body, leaving floor space clear

them. A similar idea is carried out in horse-drawn broughams and landaulets where there is a small D front. Here the front inside seat is pivoted at the ends so that it may tilt upward and allow the loose squab to fall over and hide it.

The seat which folds into a box in the floor is easily provided with a footstool, as the lid may serve this purpose. Another seat illustrated can be adapted to form a seat or footstool as required.

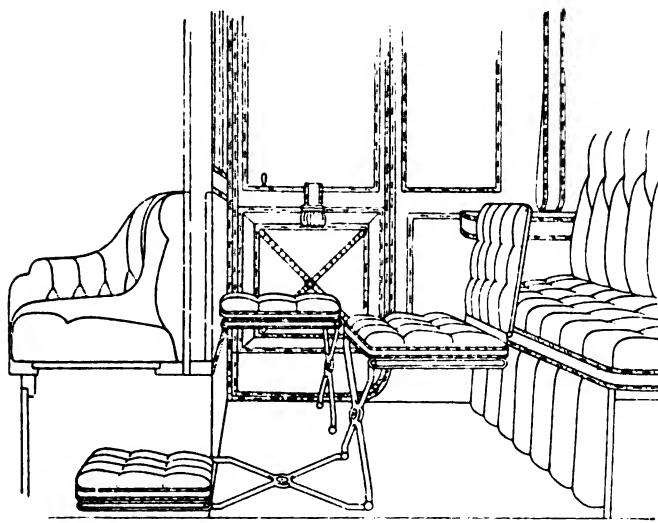
The proper securing of the door of the motor carriage is important, for, the seat on the front of the enclosed car, being opposite to the door, the occupant might find his life endangered by the sudden opening of the door through inadvertently catching the inside lever on the door rail. The illustration

shows an improved inside door handle, which, instead of being pulled sideways, is turned inward against a spring, and this releases the bolt; the handle, when released, flies back to its



**A new door handle for landaulets and limousine cars**

former position. This fitting is less likely to catch in the dress than those usually fixed.

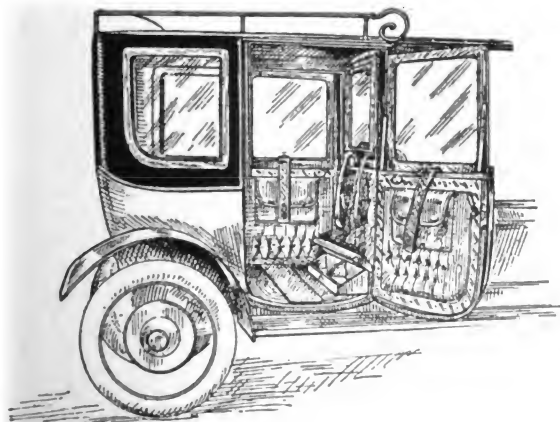


**Ciseaux Seat**

Here is an illustration of a spare seat of French design that is claimed to be roomy, comfortable, rigid when set, and capable of being made to set facing the driver, as usual, or reversed to face the occupants of rear seats. It is put away under drivers' seat as shown, or may be made to disappear under the body floor. It is said to be simple to adjust, and that it is well liked by French builders. It is patented.

#### **An Exhaust Heater**

This is a form of radiating plate of a depth about twice the

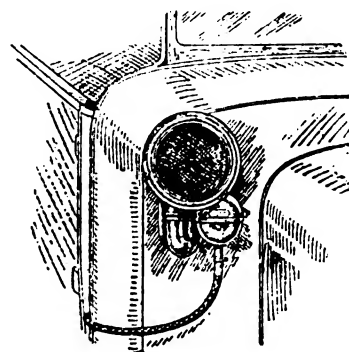


**Limousine with heater and footrest in position**

thickness of the floorboards, which is heated by a by-pass from the exhaust pipe. Special attention has been given to the manner of connecting up the two, so that there is no leakage of gases into the interior. The illustration shows this heater in position with the floor of the limousine, the control being fixed in the center of the front, in sight of the occupants. The heater is not found to be so necessary for the enclosed front seat as when that seat was without doors on the scuttle dash, and it is not now often fitted. A suitable fitting in this connection to complete the comfort of the occupants is a footstool, which can be moved about to suit the particular desires of the passenger. This stool is shown in position in the illustration.

#### **The Autovox**

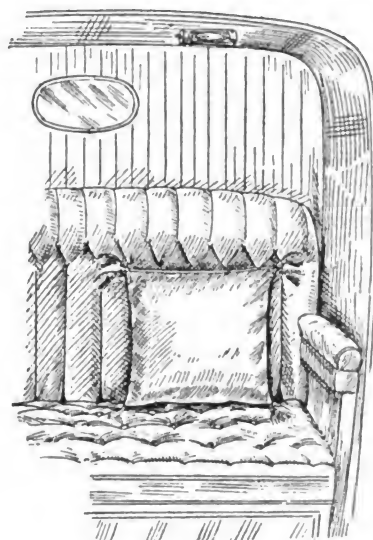
This device is a mechanically-operated warning horn, actuated by the contact of the pump with the flywheel of the car. The controlling device, fitted on the steering wheel within convenient reach of the finger of the driver, operates by means of a lever which brings the pump wheel into contact with the flywheel, and, whether the speed be four or forty miles per hour, the note sound is equally distinct. This is effected by the use of the reservoir of air shown in the illustration; this is filled under pressure, and maintains an even pressure on the reed when the driver's finger is on the control on the wheel.



**The Autovox in position on the dashboard**

#### **An Added Comfort**

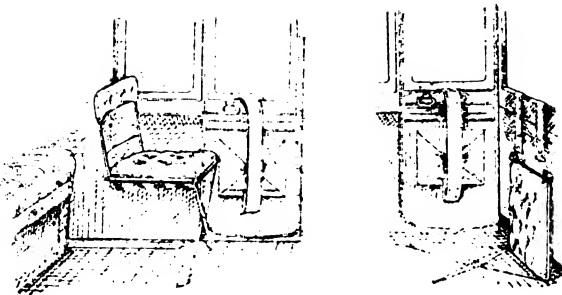
The interior seat of the motor carriage cannot always be made just to suit every passenger, and frequently it is found that the position which is quite comfortable one day is unsupportable another. To meet these varying conditions and circumstances there has been introduced an interior cushion made of fine leather and filled with soft material, of convenient size to be placed anywhere when not in actual use, without incommoding anyone. It can be raised to the level of the shoulders or placed at the side or in the angle of the seat. The electric light fitted to the rear hoop stick is a great convenience, and when there are two or three lights, either may be used at the pleasure of the occupant.



**Brooks's cushion in position.  
A hoop stick lamp.**

#### **The E.C. Folding Seat**

The folding seat shown is a simple contrivance to give two positions to one seat. This arrangement provides for a good seat facing the inside of the carriage, and also the front, so that, by reversing the position of the seat, the occupant has plenty of room either way. The operations are very simple. The seat, when not in use, is fixed against the front of the carriage, and if it is desired to face inward, the seat is lifted up and secured by a loop in the center to a hook on the front.

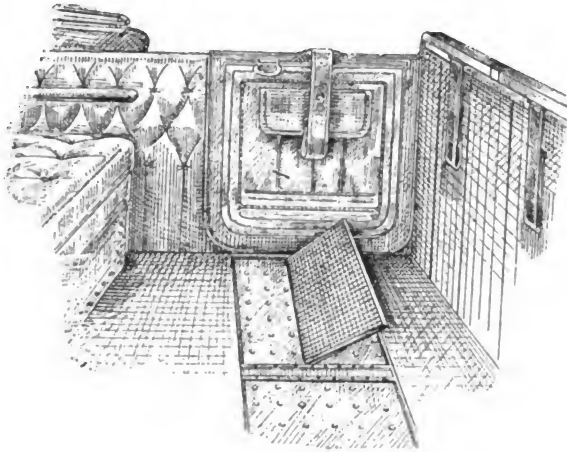


The E.C. seat as fitted to the interior of a car

Should the reverse direction be desired, the seat is turned completely over, and the socket fitted on the pin attached to the side of the car, the back rest being opened out.

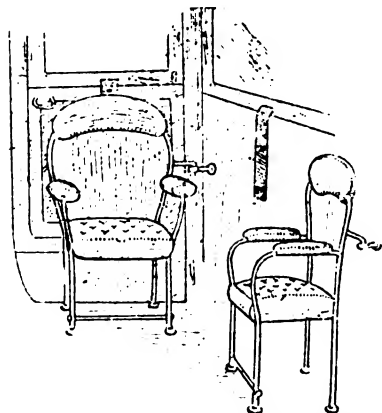
#### A Foot Warmer

The foot warmer is one of those little things which add so much to the comfort of either the open touring or entirely closed motor carriage. The system adopted is the hot-water one. A broad, flat, double dish of copper, with two junctions



underneath, is secured in a frame the thickness of the foot-boards, and takes the place of one of the boards in the bottom of the car. The warming of the water is done by the exhaust pipe, through which a pipe connected by unions with the pan is carried for a short distance.

#### A Portable Parallel Seat



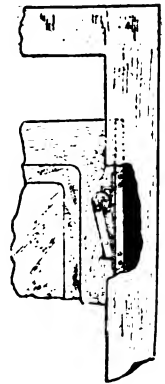
The parallel seat as used in the interior

and when it is not in use folds up into a neat compact form on the front of the interior.

#### A Window Silencer

The little fitting, of which an illustration is given, has been made to secure that silence in the window frames of a closed

carriage which is so often desired and frequently denied to the occupant of a car. In the metal box there is a spring-operated bar carrying at the end a rounded wheel which bears upon one side of the door run of the limousine or on the metal window carrier of the landaulet. This little arrangement has been found to be necessary for many purposes, chiefly for those frames which have no support other than the glass string and knob when they are neither up nor down, and the reason for its necessity is that the glass frame, when in this position, does not bear specially upon more than one fixed point. It is supplied to motor carriage builders for fixing on the frames, which can be done at any time, as no structural alterations are required.



A new window silencer in situ

#### FRENCH EXPERIMENTS WITH TARRED ROADS

The French Academy of Science draws particular attention to the danger to the eyes from dust arising from tarred roads. To determine the effect, mixtures of fine road dust to which tar in varying proportions was added were made up, and the eyes of rabbits dusted with the mixtures. The results were conclusive. While the pure road dust had little or no effect on the rabbits, their eyes were greatly affected by the presence of tar and serious diseases broke out after these applications, showing the noxious effect of the tar.

Tarring produces good results only if the roads are well built and in repair, and composed of sufficiently hard materials; if the tar fully penetrates the crevices and does not form an external crust which the first winter rains would raise up and transform into mud; and, finally, if the drying conditions during the bad season are satisfactory. With these few restrictions, it may be said that tarring effectively protects the surface of highways against motor car traffic, and even against ordinary traffic if the latter be not extraordinarily heavy.

The use of superficial tarring is becoming more and more extended, principally in the neighborhood of Paris.

In the Department of Loire the tar is spread hot by hand or by a spray. Another method consists in rendering cold tar fluid by the addition of 10 per cent. of crude oil and spreading it by the same means as the hot tar.

In the Department of Seine et Oise recent experiments have been made with divers tar and oil emulsions; deliquescent salts also have a real effect, but unfortunately of short duration, so that they can be employed only for special occasions, such as fetes, races, etc. This department employs every year solutions of calcium chloride for watering certain sections of the roads which are not in a sufficiently good condition to receive a coat of tar, at the cost of two cents per square meter (1.196 square yards). If the weather is too dry the road is sprinkled with ordinary water.

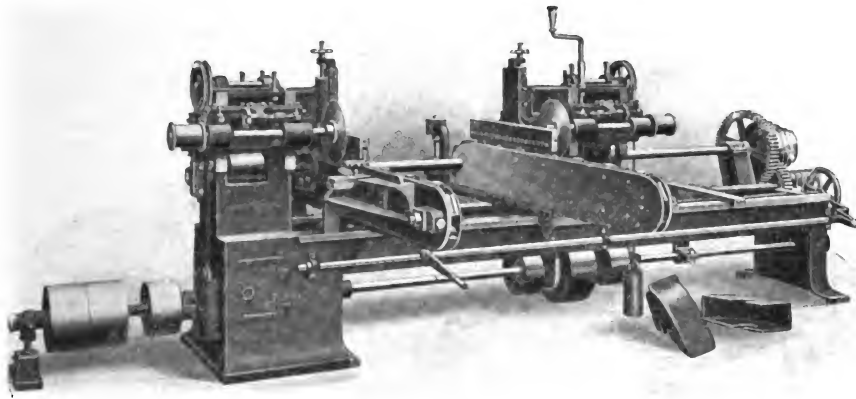
Chloride of magnesium produces the same results, but the price is higher. It is used in Germany, where three per cent. solutions (because of their low congealing point) lay the dust in the streets during winter. Emulsions such as westrumite and similar products appear to be abandoned of late because of their high price and short duration.

In France a few experiments have been made with crude petroleum, so much employed in America, but they were not continued on account of the high cost and the inconvenience of the mud which appears with the autumn rains. Besides the superficial coatings mentioned, certain binding materials are employed as a substratum to the macadam. Tar macadam is extensively employed in England, and has recently been tried in France.

He that gives quickly gives willingly.  
Whatever eases the mind is profitable also for the body.

## NEW HAMILTON DOUBLE END TENONER

The new Hamilton double end tenoner, as illustrated, is greatly improved over any other machine of this type. The saws are adjustable up and down so as to compensate for the wear of the saws in diameter, and they can be raised up sufficiently to take in very heavy work if desired. The rails are much longer, and will cut off and tenon work as wide as 30 inches. It will tenon materials as short as 5½ inches between shoulders and as long as 6 feet 6 inches between shoulders, or will cut off material 7 feet long, cutting off and truing up both ends rapidly. The feed chains are of improved construction, being made entirely from bar steel, accurately milled and fitted. The sprocket wheels are of large diameter and have 10 teeth, thus keeping the chain in accurate alignment. The rear shaft driving the sprocket wheels is of extra large diameter, thus eliminating all torsion of this shaft. The belt tighteners to the main cutterhead belt are of improved construction and will keep the belt tight in all positions and have sufficient movement to allow the joint of the belt to be cemented and take up all the stretch of the belt. The pressure bars are of improved construction being sections of three inches long, each section overlapping the other, and each section having independent spring pressure, thus holding each piece down firmly, although there is a slight variation in thickness. This allows the work to be



HAMILTON IMPROVED DOUBLE END TENONER No. 170

fed very much closer together and will hold the work firmly, although two or more pieces are fed by the same dog.

The machine has a power adjusting attachment to adjust for length of material. This is done by simply pressing a lever, the screw being operated by hand or power as desired. The machine is so arranged that all parts can be got at for adjustment, and machine can be set up very quickly, thus making it applicable to work on a very small job as well as where the work is in large quantities. Each cutterhead and saw has an adjustment independent of the other and the upper cutterheads have an in-and-out adjustment by means of hand wheels and screws so that staggered shoulders may be tenoned if desired. If copes are desired, the cope spindles are attached onto the main housings and adjust up and down with same, each having an independent up and down or in-and-out adjustment, but when once adjusted to the proper cut they move with the main housings, thus preventing the requirement of separate adjustments. The cope spindles are strongly driven and are ample to take any cut. The cope spindles may be fitted with relishing saws for any particular purpose.

The machine may be used to advantage for a double cut-off saw with power feed, cutting off the material very accurately. For this purpose, machine is arranged so that the cutterheads can be stopped instantly by simply raising the weight which operates the tightener. This allows the belt to slack off sufficiently so that the cutterhead will stop and is a great convenience when the machine is used for cutting off alone. Every part of the machine where wear is likely to occur has means for taking up the same, all parts being fitted with gibs and

screws to make the adjustment as tight or slack as desired. The dogs on the feed shown are quickly placed back into position when needed, there being a screw adjustment to set them square and hold them in position when so set. Altogether this is the best double-end tenoner on the market, guaranteed to work perfectly. For further particulars address the makers, The Bentel & Margedant Company, Hamilton, Ohio.

## THE ABSURDITY OF CONSIDERING VARNISH PRICE

It has been carefully estimated that the cost of painting and varnishing a buggy such as is the product of the wholesale factory varies between three and four dollars, the exact figures could be given as compiled from the records of our factory, but the cost in the terms of an average is near enough. The varnish cost in the calculation is inside of forty cents. This makes it worse than poor business judgment to buy any varnish less than the best—it becomes a kind of mild imbecility. It makes no matter how "cheap" the work, the very best varnish that can be applied is the most economical. It is throwing money away as if it were chaff to act differently.

The consideration of what is the "best" varnish is the whole gist of the proposition. Something that will look good after a long time as well as soon after being applied is what is wanted. The user of the vehicle is the unknown factor in the varnish equation. His acts have to be dealt with "sight unseen."

There are good varnishes that dry so slowly that they are in the danger zone for too long a time; something is wanted that dries so hard, so quickly and so brilliantly that it will dodge even the finger marks of the careless workman in the shop where he is manipulating the vehicle in its still unfinished state. This is asking very much of something so sensitive as varnish, and the buggy builder would never ask the question and set himself the problem of answering it. This has been done in the new series of varnishes made by the house of Valentine which have been named Vanadium—a most happy thought—as it typifies in metal the highest quality of yet discovered endurance, and the varnishes may justly be said to do the same thing in their field. Their qualities are too remarkable to appreciate outside of actual use and test in the varnish room. We think it is the duty of the progressive painter to look into the matter in these instances where he has it yet to do. If information—in advance—is to be desired, Valentine & Company have been to great expense and trouble to more than carefully set forth the claims in a literature that is to be had for the asking.

## MOVEMENTS OF PARRY TRAVELERS

The Parry Mfg. Company will handle the trade in Oklahoma during the coming season with their direct representatives. W. C. Henderson will cover the northern part of the state and northwestern Arkansas. The southern part of Oklahoma and Arkansas will be traveled by George B. Bandy and his corps of salesmen out of Dallas.

W. L. Seamans is a new Parry salesman for southern Kansas traveling out of Wichita. He has been traveling it for years in various vehicle connections.

Edward Chew, one of the youngest Parry salesmen, has been transferred from northern Kansas to northern Missouri.

James H. Collins, who has been traveling southern Kansas, has been transferred to Nebraska territory. Wm. F. Habig, general traveler for western territory, will still travel northern Kansas and make some special trips into Nebraska.

J. E. Horseley, who has been traveling out of Fort Dodge, Iowa, for Parry Mfg. Co., has been given the western half of the state for his territory and will change his headquarters



to Des Moines. While in Indianapolis recently, Mr. Horseley culminated a courtship of several months by his marriage to Miss Hazel Smith, a popular young lady of Indianapolis. The young couple will live in Des Moines.

### BANNER BUGGY CO. BUYS CARRIAGE WOODWORK PLANT

The Cooper Carriage Woodwork Company, St. Louis, has been purchased by the Banner Buggy Company, with all the machinery and equipment. The latter company will operate the plant in connection with its buggy factories near Main and Rutger streets. The purchase with projected improvements means an investment of \$200,000.

The buggy company has purchased heavily from the woodwork company ever since the latter began operations about four years ago. The Terminal Railroad Association's tracks serve the woodwork company and also the buggy company, which made shipments between the plants easy. The three buildings on the purchased tract are two factories, respectively 200 x 300 feet and 50 x 100 feet and a sawmill, about 75 x 75 feet. They are all one-story brick.

Mr. Cartwright says that the plant would be greatly remodeled and much new machinery will be installed to diversify the product of the shops. The shops at present produce spokes, axle caps, spring bars and body bars, among other articles.

Ralph M. Cooper, president of the Cooper Company, says he is not ready to announce his plans for the future or to state whether the company would be dissolved. The company has a capital stock of \$80,000, and its officers, beside Mr. Cooper, are Bruce R. Campbell, vice-president, and Evan James, secretary and treasurer.

### CHANGING POSITIONS

Fred G. Letts, formerly sales manager for the W. A. Paterson Company, Flint, Mich., has become connected with the Barbour Buggy Company, of South Boston, Va., as manager.

W. G. Tennant, a pioneer in Gotham automobile circles and well known as head of the Peerless Motor Car Company of New York City, has resigned. Mr. Tennant's resignation was tendered that he might assume active management of the Tennant Motor, Limited, 2447 Michigan avenue, Chicago, distributors of Henderson motor cars, and will be associated with his brothers, J. G. and J. W. R. Tennant.

Chas. E. Giltner has been appointed general sales manager of the Velie Motor Vehicle Company, of Moline, Ill. During the past four years Mr. Giltner has been connected with the Rambler automobile industry, a portion of the time as general traveler and lately as manager of the Rambler Motor Company, of Omaha.

### DYER PATENTS CORRALLED

After negotiations extending over a period of more than six months, the Automobile Board of Trade has perfected an arrangement with the Enterprise Automobile Company, owners of the Dyer transmission patents, granting its members license to operate under them.

The patent numbers are as follows: 643,595, 657,650, 662,400, 662,401, 676,223, 885,986, 921,963.

These patents cover practically all forms of sliding gear transmission in use on motor cars at the present time.

The patents committee of the Automobile Board of Trade which successfully conducted the negotiations, is composed of the following: C. C. Hanch, W. H. VanDervoort, L. H. Kittredge, Alvan Macauley, L. E. Latta.

### CATALOGUE No. 12

A very comprehensive as well as elaborate catalogue has been received from The Cleveland Hardware Company. It is a

monument to careful and accurate compilation, and if automobile builders cannot find what they are looking for in drop forgings to suit their requirements they would have to consult a dream book. The catalogue is a credit to the printer's art as well.

### HOW TO INCREASE VARNISH LUSTRE

Owing to hard usage or knocking about in the repair shop, varnish is dimmed, or the grease and oils have injured it.

In such case, here is a preparation that will help out wonderfully to increase the brightness of the varnish or restore it when faded.

It is a polish of beeswax and gasoline. Place half pint gasoline in a bowl, and dissolve into it enough wax to make the mixture the thickness of thin paint. The wax is dissolved by rubbing it against the surface of a hot sad iron, letting it melt into the gasoline. Stir often. No danger in this operation if no flame light is near during the operation.

When the car has been washed in the ordinary way, the bodywork is rubbed over with a cloth dipped in the polish, and after being allowed to dry—the longer the better—is polished with a soft duster. This preparation will be found exceedingly useful for a car body having received oil and grease stains as the result of a visit to the repair shop, for all the grease is removed without any dulling of the varnish; indeed, after polishing up there is a decided increase in the brilliance of the paint work, and the glossy surface is not so liable to retain dust as the plain paint surface. A polish of this nature will retain its lustre for at least a week, and even longer if turpentine is used in place of gasoline. Turpentine, however, has the disadvantage of not being such a quick grease remover. If anything, a car is easier to wash after being polished with beeswax than before, for the water immediately runs off the wax surface. This polish can be used with advantage on leather upholstery without any fear of rendering it sticky.

### FINE TRIMMING AND PAINTING COMBINATION

H. J. Mulliner, the English coach builder, has given a fine example of car treatment, where the body builder has been allowed free play.

The car itself is a V-fronted Berlin of recent design. The tank is arranged in the front scuttle, which is deep, and the front doors are hinged on the center pillar, giving a wide and clear entrance on either side. The division in the center has return corners, which fit in with the curve of the front couch seats, the center window being made so that it can be dropped if desired, throwing the interior into one.

The highly polished, dark grey sycamore is the wood with which the upper part of the interior and the doors are paneled. The carriage painted a dove grey, relieved with a fine line of coral red. The front seat upholstered in red morocco leather, and the rear seat in a specially woven close rep silk of special design. A very fine effect was produced by the combination of the rich silk and the decorative, polished sycamore wood.

### TIFFIN WAGON CO. ADDS MOTOR TRUCKS

The Tiffin (O.) Wagon Company is about to add to its business the manufacture of a line of commercial motor trucks. So far only sample outfits have been constructed, but the company expects to have a full line ready for the spring trade of 1913. For many years this concern has been well known to the trade through its line of farm, dump, flushing and sprinkling wagons, commercial vehicles and trucks.

### PERSONAL

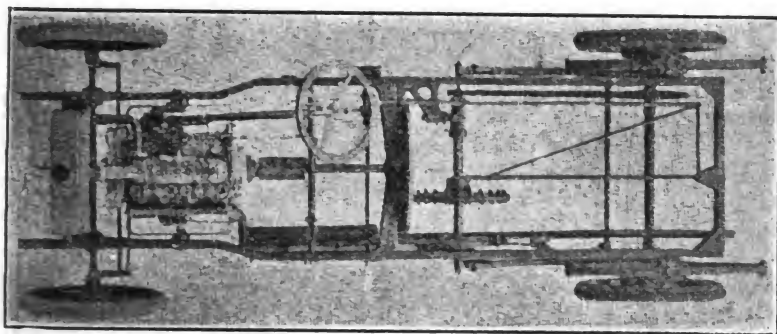
John F. Hammond, of Bloomington, Ill., will act as traveling salesman for the Charter Oak Wagon Company, of Fairfield, Iowa, with territory in Northern Iowa, making Cedar Rapids his headquarters.

## FRICITION DRIVE

This species of drive has so many attractive advantages that no end of thought and expedient is devoted to its improvement. Its qualities are too well understood to need details.

A late example that is said to defeat all objections is that of the Turicum car, a Swiss product. We illustrate the chassis and briefly describe its features.

It will be seen that the position of the driven disc is controlled through a triangular lever pivoted on a bracket on the rear cross member of the frame. The gear lever is coupled up to this triangular lever and the latter, at its forward apex, engages with a collar on the driven disc, and, thereby, slides the disc along the squared shaft from left to right, or right to left. The shaft is squared for a sufficient portion of its



length to allow the driven disc to be moved from the top-speed position on the left, when the greatest radius of the driving disc is being employed, to a point on the right, runs in bearings in a bracket that is allowed to swivel, and at the right hand end of the shaft is the chain pinion, which transmits the power through the driving chain to the differential on the rear axle. The left hand end of the squared shaft is supported in a bearing carried in a large collar, which is controlled by the clutch pedal. Pressure on the clutch pedal draws the shaft rearwards at its left hand end, thus removing the edge of the driven disc from contact with the face of the driving disc. The swivelling of the support of the shaft close to the chain pinion enables the designers to make use of the pull of the chain to keep the disc in contact, thus ensuring efficiency and an absence of slipping. The edge of the driven disc is formed of leather, the end grain of a number of strips being employed. It has been found that this edge will wear for over 15,000 miles without the need arising for its renewal.

The range of gears is usually limited by the number of positions in which the disc can be locked. In the Turicum system there are six forward-speed notches, but as a matter of fact the disc may be moved sideways to the smallest possible degree, and thus the finest gradations desired can be obtained. Should the disc then move laterally of its own accord, it can only go so far as enables the gear lever to engage with the first stop.

Still another drive of this character is the French Dumond. The motor can be dismissed with the remark that it is a single cylinder one of 85 x 170 mm. bore and stroke, having very large diameter mechanically-operated valves, and possessing a suppleness and silence which would do credit to some engines with three more cylinders. The inventor of the Dumond takes the direct drive from the motor to each of the road wheels by means of friction discs and two propeller shafts. The motor is set transversely across the front of a channel-section frame, and has a large diameter steel disc on each end of its crankshaft. In contact with each disc is a fibre-faced drum, mounted on the square end of a propeller shaft, the rear extremity of which carries a bevel pinion meshing with a bevel wheel on the short driving shafts carrying the road wheels. The bevel gearing is naturally within a housing, as in the case of bevel gearing applied to the usual type of shaft-driven car. As will be readily understood, the drive is transmitted direct,

and with the least possible loss (for a friction-driven car) from the motor to the road wheels. Obviously the shafts will turn in opposite directions, but the placing of the bevel pinions respectively to the left and right of the bevel wheels naturally causes the road wheels to be driven in one direction. Owing to the length of the shaft, almost equal to the wheel-base of the car, there is no necessity for universal joints in the transmission, for the rise or fall of the shaft at the driving wheel end is only equivalent to a displacement of a millimeter or so at the motor end. The two fibre-faced wheels are connected up to be moved along their respective shafts together, providing an almost infinite range of ahead and reverse positions. Adjustment is provided laterally for the two shafts in order to take up the wear of the fibre, this adjustment being made from outside the frame. According to the makers, there is an entire absence of slip in the friction drive; under the most severe tests the motor has stalled before any slip has occurred between the surfaces in contact. Its construction and the system adopted are certainly ingenious, and the duplicate drive makes for an enhanced degree of efficiency for frictional transmission of power, and also obviates the necessity of a differential gear.

There would seem to be reasonable grounds for assuming that this system of duplicated friction discs has much to commend it, while the design also lends itself to better protection from the inclemencies of the weather than is generally the case. Another interesting point is the fact that there can be no differential slips of one of the driving wheels when starting up, as the drive being duplicated and direct, there can be no multiplication of speed from the one wheel to the other.

## COMMERCIAL GRAFT

H. H. Smith, counsel for the Michigan Manufacturers' Association, recently made an address on the subject, parts of which we reproduce:

For a long time, as American business grew and flourished, it was the boast of our business men that American industry was honest industry. Its competition was always honest competition. That competition, so aggressive as it was, gave birth as it increased in vigor, in dishonest minds to insidious and dishonest practices and today the system of graft and commissions—and, I think the word is not too hard, of thievery—is eating the heart out of one industry after another. The history and growth of these conditions from the commission paid to introduce the goods through the dishonesty in the sales department to rotten quality and to downright theft and dishonesty is logical, steady and rapid. It is condoned by us in its early stages in an enterprising salesman, but when it appears in our own buyer, it is the cause of the most serious and the gravest alarm. Its effect, whether practiced in the selling department or in the buying department is alike vicious and demoralizing. Everywhere it promotes dishonesty and its vile touch contaminates every clerk, every salesman, every worker, then the manager, and finally the whole structure of the business. Its course runs rapidly and like a leprous disease, it can rot in a decade an entire industry. Who today will deny the conditions of the varnish trade or contend that nine-tenths of that great business is not based upon the bribery of the buyers? Who knows how far on the road to the same wholesale contamination any other of our manufacturing industries has already gone? It is a fortunate manager today, who, as he sits at his desk and scans his invoices, knows how much of that price is not to cover the cost of corruption of his own employes, or who can say when he knows the degradation of the product that he buys, that that degradation has not been condoned and winked at by the buyer who has in his pocket the commission of the seller? It would be bad enough if the result of this growing system of graft were to corrupt buyers and salesmen and send managers uneasy to their work too

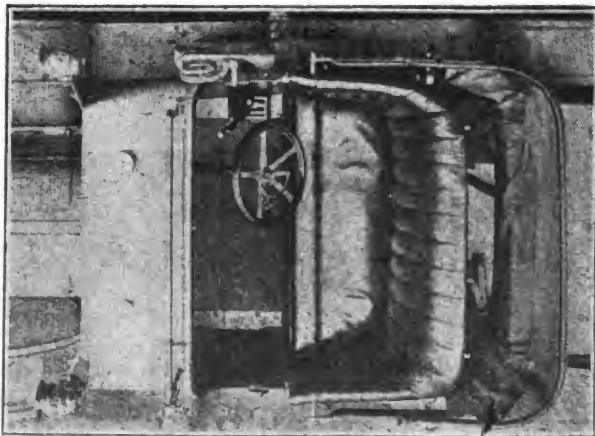
weak to resist the pressure of the demands of more business, but even if they do not openly approve it, the managers in a short time themselves must yield to the blight, for there is no way to recoup these added expenses except by shoddy quality and fraudulent manufacture, and so, from the salesman and the buyer to manufacturer and the owner all have become accomplices in the fraud and partners in the crime.

I do not wish to deal in harsh words—I only want to awaken you to a real commercial danger and a great commercial task. I do not speak of this as a preacher; I deal with it as it relates to the dollars and cents in your capital, the investment in your enterprise. If what I say is received by you individually with indifference, it is either that it has become so common amongst you that it is accepted as the usual thing in business; a custom of the trade; a commercial law, and I know that here this indifference does not arise as yet from the latter cause. It is time that some association should raise the standard of honest business high in the van of American commerce.

Write down your motto as "Honest Business." Set out to punish bribery; set out to bring the grafter before the officers of the law in every community in the state; prune your own organization of the dishonest salesman and drive out everywhere this corruption. You shall have then done a service as an organization that shall in future years bring you commercial and financial profit; you shall have done a service greater than the passage of laws to redress physical injuries; greater than the passage of laws to levy equal taxes; greater than the passage of laws to make the railroads serve you all alike, because you shall have instilled into your whole business community a new reverence for honest dealings and you will have raised a banner, which if it be pulled down, will carry with it business enterprises and private honesty, but which when unfalteringly upheld, shall lead your business and American industry back to the heights where dwell integrity and prosperity.

### POSITION OF LEVERS, INSIDE CONTROL

The position of levers is transposed, the brake being the inside lever, affording a direct pull. The plain drawing shows



disposition of brake and change speed lever with plenty of clearance between body and levers, also between the two levers.

### COST OF LIVING FIGURED OUT

How American citizens are taxed from cradle to grave is shown in a speech recently delivered by Representative Underwood on the floor of the House:

"Under the present oppressive tariff law the laboring man returns at night from his toil clad in a woolen suit taxed 75 per cent., shoes taxed 12 per cent., stockings and underwear 71 per cent., a cotton shirt taxed 50 per cent., and a wool hat and woolen gloves taxed 87 per cent. He carries a dinner pail taxed 45 per cent., and greets his wife as she looks through

a window pane taxed 62 per cent., with a curtain taxed 43 per cent.

"After scraping his shoe on an iron scraper taxed 75 per cent., he wipes them on a mat taxed 50 per cent. He lifts the doorlatch taxed 5 per cent., steps on a carpet taxed 62 per cent., and kisses his wife in a woolen dress taxed 75 per cent. She is mending an umbrella taxed 50 per cent. with thread taxed 30 per cent.

"The house is made of brick taxed 25 per cent. and lumber taxed 96 per cent. and plain furniture 35 per cent. He hangs his pail on a steel pin taxed 45 per cent., using soap taxed 20 per cent. His looking glass was taxed 45 per cent., and he combs his hair with a rubber comb taxed 35 per cent. He proceeds to eat his supper which was cooked on a stove taxed 45 per cent., for which his wife used pots and kettles taxed 45 per cent. On their table is common crockery taxed 55 per cent., and cheap tumblers taxed 45 per cent. The sugar he puts in this tea is taxed 54 per cent., which he stirs with a spoon taxed 45 per cent.

"His meal is a frugal one, because the cost of living is high. He uses a knife and fork taxed 50 per cent. in eating salt fish taxed 10 per cent.; bread, 20 per cent.; potatoes, 22 per cent.; salt, 33 per cent.; butter, 24 per cent., and rice, 62 per cent. He proceeds to read a book taxed 25 per cent., and at the close of the day reclines in an iron-framed bed taxed 45 per cent., with a mattress taxed 20 per cent., sheets taxed 40 per cent., woolen blanks taxed 75 per cent., and a cotton spread taxed 45 per cent.

"He is taken ill, and the doctor prescribes medicine taxed 25 per cent., which, being ineffective, he passed from this active sphere of life, and his remains are deposited in a coffin taxed 35 per cent., which is conveyed to a cemetery in a wagon taxed 35 per cent., deposited in its last resting place in mother earth, and the grave filled in by use of a spade taxed 45 per cent., while over his grave is raised a monument taxed 50 per cent."

### SECOND DECADE OF THE AUTO

J. H. L. Mosier, long since gone to join the majority, was in life a carriage-smith of high excellence. A man of initiative and much originality. He was at the head of the smith department in the house of Brewster & Company. Among his posthumous contributions, not appearing in print, we have found a paper in which he speaks of the automobile as it then presented itself to him, and we have concluded that his observations contain a certain interest viewed at the present time as a retrospect. We therefore quote a large part of his paper:

"The automobile is now moving along in its second decade in America.

"No event of greatness moves along in progress without greater or less sanguinary incidents. With the auto it would not be amiss to say that its sanguinary baptisms equal one per day. . . .

"Up to 1899 nearly all vehicle journals held aloof, pro or con, in their doings or undoings, unless with the greatest caution, like the skater when on dangerous ice. All were apparently afraid. The writer was the first to use his pen, after a thorough investigation, and then in favor of the automobile, and suggesting the aid of the advanced carriage mechanic to reduce the nondescript behemoth to something pleasing to the eye of the vehicle user.

"Many suggested improvements were offered to change the lines produced from a thing composed of a mixture of the Dutch galleon and the Conestoga wagon. The ideas were generally copied in all journals interested in such matters, and changes in construction also became apparent, combining lines of beauty with those of usefulness; also harmonious effects in colors; but perfection is still in the distant perspective.

"Safety of construction is a vital point that has been overlooked, so great has been the desire for speed and beauty. Faulty construction of steering gear, brakes failing at critical moments, and other items are in the count. There seems to

be no end in sight. History is only repeating itself in the art of vehicle manufacture.

"In the beginning of the last half of the century just passed the carriage builders had reached the topmost point of beauty of design and pleasing effect but at the loss of safety of construction. At that time the trotter and the pacer were the reigning fads. Long Island held the trotting tracks. The brushes going to and returning from the meetings were the survival of the strongest and the fleetest. The wrecks along the roadway following a trotting meeting were many, and due chiefly to faulty construction of the vehicle. About 1863 changes were wrought owing to the advent of a young smith with ideas. The breaking of parts ceased, the wreckage was a thing of the past, and other builders copied the ideas.

"The story of the auto of today is the same. The builder of today of that machine flatters himself that he can put in a six cylinder to do 60 to 100 miles an hour on the same gear or chassis he would use for a two cylinder, 20 horse, to do 20 miles an hour. There are many things at fault with the gear and the various connections. Any man who expects to wake up a car at a 60 mile clip without taking off the hind tires is a candidate for an insane asylum. The steering gear of a 20 horse power car is 60 per cent. inadequate for a high speed. As today constructed the writer would not ride in a car at speed equipped with the present steering knuckles.

"The average spring under the cars is inadequate as regards form and all other essentials. Axles, steering gear and other parts needs remodeling. Much more can be said about the structural parts of the auto."

#### PERCENTAGE INCREASE IN VALUE OF PRODUCTS OF LEADING INDUSTRIES

1899 to 1909		
Position	Industry	Per cent.
1	Automobiles, bodies, parts.....	5,148.6
2	Copper, tin and sheet iron.....	155
3	Cotton seed products.....	151.8
4	Women's clothing.....	141.5
5	Electrical apparatus.....	139.4
6	Copper, smelting and refining.....	129.4
7	Bread products.....	126.3
8	Confectionery.....	122.3
9	Gas, light and heat.....	120.3
10	Liquors distilled.....	111.5
11	Paper and pulp.....	110.2
12	Butter and dairy products.....	109.9
13	Knit goods.....	108.8
14	Petroleum, refining.....	91.2
15	Blast furnaces, iron and steel.....	89.3
16	Chemicals.....	87.6
17	Printing and publishing.....	86.7
18	Railroads and steamboats.....	86
19	Cotton goods.....	85.3
20	Furniture.....	83.6
21	Silk.....	83.6
22	Paint and varnish.....	79.5
23	Marble and stone.....	77.6
24	Boots and shoes.....	76.8
25	Flour mill products.....	76.2

As regards percentage of increase in wage earning, the automobile industry stands first, with a percentage of 3,278.9, and is followed by the electrical apparatus business, with a percentage of 107.7, or one-thirtieth of the increase of the motor car industry.

In value of products the automobile industry is 22 on the list, carriages and wagons and materials being 32 on the list.

In value added by manufacture, motor cars are 21, and horse-drawn vehicles 28, showing the rake-off is larger on automobiles.

#### ORIGIN OF THE CAB STAND

The hackney coach came into use in 1605 in London.

A letter dated less than thirty years later thus records how the cab-stand originated.

"I cannot omit to mention any new thing that comes up amongst us, though ever so trivial. Here is one Captain

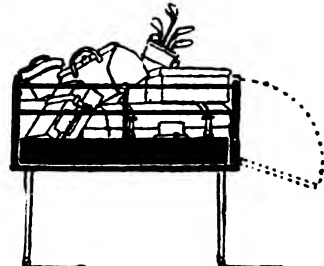
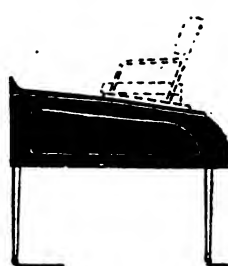
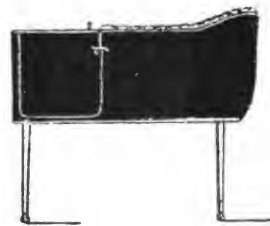
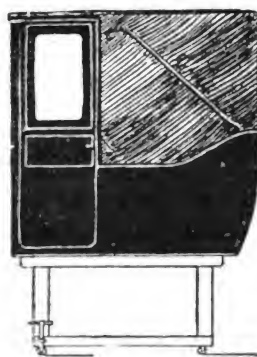
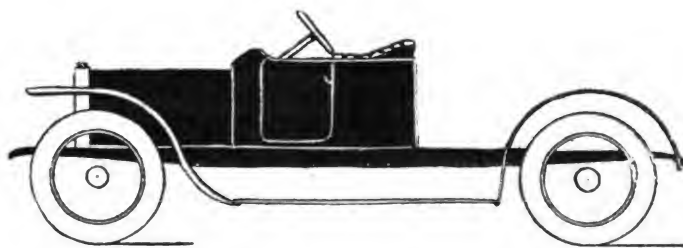
Bailey, he hath been a sea captain, but now lives on land about this city, where he tries experiments. He hath created, according to his ability, some four hackney coaches, put his men into livery and appointed them to stand at the Maypole in the Strand, giving them instructions at what rate to carry men into several parts of the town, where all day they may be had. Other hackney men veering this way, they flocked to the same place and performed their journeys at the same rate so that sometimes there is twenty of them together which dispose up and down, that they and others are to be had everywhere, as watermen are to be had at the waterside."

It was estimated that there were over 6,000 vehicles of all classes in London in 1636. So numerous did they become, hackney coaches in particular, that they were voted a nuisance and measures were contrived to restrict their use. The King issued a proclamation on the subject. Among other inconveniences, it was said they destroyed the roads and caused a rise in the price of horse feed. They were forbidden the city unless the passenger was making a journey of at least three miles.

#### INTERCHANGEABLE BODIES

A new English idea that looks good is a system of interchangeable bodies that may be changed, adjusted and fitted in a brief time.

The bodies slide on the chassis, needing no lifting tackle.



There are no nuts or bolts to remove, and the range of change as shown in the illustrations covers many needs.

This might be an idea that builders could put to profitable use.

# Trade News From Near and Far

## BUSINESS CHANGES

P. R. Ohlen, of Luverne, has purchased the business of J. G. Murphy, in Adrian, Minn.

E. Taborsky has disposed of his stock of buggies, etc., in Dodge, Neb., to D. A. Miller.

George Sheldon has purchased the stock of vehicles, etc., of A. D. Moody, in Osceola, Neb.

Ira Short has purchased the stock of carriages, etc., of Richards & Miller, in Weldon, Ia.

F. H. Linderbloom has purchased the stock of buggies, etc., of G. N. Whiting, in Giltner, Neb.

E. M. Frantz has sold out his stock of buggies, etc., in Franklin, Neb., to F. O. Houston.

John H. Spurgin has succeeded to the entire business of Spurgin & Jacobs, in Sandyville, Ia.

Mr. Ash has succeeded to the vehicle and implement business of Ash & Foulke, in Wellington, Kas.

Kinyon & Stratton have disposed of their vehicle business in St. Edwards, Neb., to R. W. Stillinger.

J. C. McIlrath has purchased the hardware and vehicle business of Duffus & Son, in Montezuma, Ia.

Sells & Martin have succeeded M. W. Sells in the vehicle and hardware business in Randolph, Neb.

R. M. Herre has purchased a half interest in the Davidson stock of vehicles, etc., in Ainsworth, Neb.

Albert Beyer has disposed of his stock of vehicles and implements in Caldwell, Kas., to Guy F. Clark.

H. Claney has purchased the stock of vehicles, etc., of Johnson & Nelson, in Newman Grove, Neb.

A. T. Brom has succeeded to the buggy and implement business of D. F. Spratt & Son, in Fairfield, Ia.

W. M. Stout & Co. have disposed of their stock of vehicles, etc., in Brighton, Ia., to Thomas & Holmes.

Howe & Crawford have purchased the stock of vehicles and implements of C. F. Speck, in Grayville, Ill.

F. M. Brick, of Haddam, Kas., has purchased the stock of buggies, etc., of J. C. Stanberry, in Ionia, Kas.

M. L. Brummit, of New Carlisle, Ind., has disposed of his stock of vehicles, etc., to Fred T. & Chas. Zeck.

E. L. Meish has disposed of his stock of vehicles and hardware in Alexandria, S. D., to Chas. Sweesy and E. E. Adkins.

## IMPROVEMENTS AND EXTENSIONS

Wm. Sigea has moved his stock of buggies, etc., to his new building in Monroe, Neb.

The Thompson-Diggs Co., of Sacramento, Cal., has recently moved into larger quarters.

The Lake Charles Carriage & Implement Co., of Lake Charles, La., has let the contract for the building of a new warehouse.

Frank McDougall, vehicle dealer of Brown City, Mich., recently completed his new building located on the main corner of the city. The building has a floor space of 100 x 36 feet, and is said to be the most modern and up-to-date repository for vehicles in that section. The entire front is of plate glass.

## NEW FIRMS AND INCORPORATIONS

S. A. Smith is opening a stock of buggies and hardware in Renville, Minn.

Walter Hill is about to open a stock of buggies, etc., in Oklahoma City, Okla.

Nels Hjelm is about to engage in the carriage and automobile business in Bancroft, Neb.

Frank Brady is about to engage in the vehicle and automobile business in Henderson, Minn.

Louis Schoetke is about to engage in the buggy and hardware business in Marengo, Ia.

August Johnson is about to engage in the vehicle and implement business in Glenfield, N. D.

The Hamilton Vehicle Company has been organized at Hamilton, O., with a capital stock of \$50,000. The officers are as follows: President, L. J. Brenig; vice-president, Wm. Kloebe; secretary, A. A. Dornburg.

## FIRES

The stock of vehicles, etc., of Watson & Lockwood, in Chamberlain, S. D., has been damaged by fire.

## GOOD WAY TO PAINT NEW GEARS QUICKLY IN REPAIR WORK

All wheels and wood parts to gears and chassis are supposed to be primed when they come into the paint shop. New wheel axle caps should be sandpapered well before priming, and if wood spring bars are used they also should be sandpapered and primed. All springs should be taken apart or loosened so that they can be sandpapered well and leaded between the flat parts or, in fact, all over. Use a lead with little oil in it for springs, as springs when they come from the factory have a coating on them that is dangerous to paint over, and this method stops the rust from coming out on the edges and causing the paint to scale off after the blacksmith has ironed the gears.

A quick way to do gears is to putty right on this priming, and you can sandpaper all you please. After sandpapering, dust well and give the gear a coat of dark lead with a little oil in it. Put this coat on with a camel's hair brush so you can get on a good heavy coat. Now moss or hair this coat. Next give the gear a coat of color the same as you wish it finally to be, a coat of color varnish, stripe and finish. This is the old quick way and a good one, says W. A. Riggelman, in American Blacksmith. What is the use of giving this new gear a coat of lead on top of the priming and then puttying and sandpapering it all off and then giving it another coat of lead? The way I have just explained saves one sanding and one coat of lead. Thus time and stock is saved and your job is just as good.

Here is something to remember: Always have the blacksmith do all his drilling with linseed oil on anything that has to be painted. Then you will have no trouble with grease on your wheels and gears. Old gears at the present time are not in very bad condition unless you strike some old job that has been painted several times. You will have to sandpaper an old gear down good with a No. 2 sandpaper which puts it in pretty good shape. After you have finished sandpapering, give the gear a coat of dark lead mixed with keg white lead, dry lamp black, a small amount of japan and oil well mixed and thinned with turpentine. Put on with a camel's hair brush. When dry, putty very little and sandpaper those spots. Moss the rest of the gear. As you sandpaper a wheel or the gear part or shafts, dust and touch up the putty spots with the color the gear is to be. When you have sandpapered, give the gear or chassis a coat of color on the putty spots so that they will not show and, finally, color varnish, stripe and finish. This is a quick way to do this work. Use a good gear and body finishing varnish.



# Recently Granted Patents of Interest to the Carriage Industry

- 1,021,440—Resilient Wheel. Rex E. Arnold and C. P. Hockett, Kouts, Ind.
- 1,021,355—Spring Wheel. John C. Deckard and I. L. Deckard, Vincennes, Ind.
- 1,021,240—Pneumatic Hub for Vehicle Wheels. Tessenus Duyssens, Maastricht, Netherlands.
- 1,021,512—Motor Vehicle Frame. Powell Evans, Philadelphia, Pa.
- 1,021,307—Vehicle Wheel Tire. Luke G. Fleming, Tarrytown, N. Y.
- 1,021,591—Resilient Tire. Christian Friederich, Tripps, S. D.
- 1,021,515—Resilient Wheel. Carroll D. Galvin, Merchantville, N. J., assignor of one-sixth to C. Jacobsen, one-sixth to E. S. Cochran, and one-sixth to A. F. Jorss, Washington, D. C.
- 1,021,246—Vehicle Tire. Wilhelm A. Giermann, Blencoe, Iowa.
- 1,021,459—Vehicle Wheel. Edward A. Glenn, Chicago, Ill.
- 1,021,247—Wheel Hub. Friedrich W. J. Goersch, Cleveland, Ohio.
- 1,020,977—Vehicle Wheel. Luther L. Gregg, Jr., Lonejack, Mo.
- 1,021,251—Spring Suspension for Road Vehicles. Leonard Harris, London, Eng.
- 1,021,719—Sleigh Attachment for Vehicles. Clarence E. Huber, assignor of one-third to J. Huber and one-third to H. M. Huber, Mansfield, Ohio.
- 1,021,610—Wagon Hub. Edward A. Krider, Decatur, Neb.
- 1,021,197—Vehicle Driving and Braking Means. Alvaro S. Krotz, assignor to Sears, Roebuck & Company, Chicago, Ill.
- 1,021,467—Wheel. Charles E. Martin and S. J. Clokey, Washington, Pa.
- 1,021,061—Motor Vehicle. Hiram P. Maxim, Hartford, Conn., assignor to The Waverley Company, Indianapolis, Ind.
- 1,021,616—Pneumatic Tire. James McGinnis, Johnstown, Pa.
- 1,021,422—Tire for Vehicle Wheels. Ted J. Mell, assignor to The Republic Rubber Company, Youngstown, Ohio.
- 1,021,724—Mud Guard for the Wheels of Motor and Other Vehicles. Charles H. Nichols, Wolverton, Eng.
- 1,021,624—Automobile Starting Mechanism. Alonzo F. Olds, Chicago, Ill.
- 1,021,740—Automobile Body. Louis W. Oster and F. J. Miller, Cleveland, Ohio; said Oster assignor to said Miller.
- 1,021,476—Wheel Hub. Wm. T. Pursglove, Philadelphia, Pa., assignor to The A. Mecky Company.
- 1,021,630—Vehicle Fender. Alfonso Sagrarnoso, Philadelphia, Pa.
- 1,021,072—Vehicle Tire. Charles A. Schenkel, Wabash, Ind.
- 1,021,275—Headlight for Automobiles. Anton Stepanek, Newcastle, Ind.
- 1,021,561—Vehicle Tire. Benjamin C. Swinehart, Youngstown, Ohio.
- 1,021,711—Vehicle Wheel Tire. Benjamin C. Swinehart, Youngstown, Ohio.
- 1,021,435—Vehicle Fender. Edgar M. Thompson, Richmond, Ind.
- 1,022,220—Resilient Tire. Gideon S. Adams, Seaville, assignor to Eureka Double Resilient Tire Mfg. Co., Camden, N. J.
- 1,022,296—Wagon Body. Wm. E. Brelsford, Triumph, Ill.
- 1,022,127—Tire. Edward Dettelbach, Cleveland, Ohio.
- 1,022,228—Vehicle Spring. Richard J. Edwards, Galena, Ill.
- 1,021,983—Cushion Tire. Albin Hajos, Chattanooga, Tenn.
- 1,021,719—Automobile Brake and Jack. Paul Janek, Cleveland, O.
- 1,022,087—Automobile Starter. Charles D. Jenney, Indianapolis, Ind.
- 1,021,783—Wheel Rim for Pneumatic Tires. Carl G. Kleinschmidt, Herne, Germany.
- 1,022,369—Vehicle Wheel. Gerard B. Lambert, New York, N. Y.
- 1,021,939—Starting Device. James McNamee, Amsterdam, N. Y.
- 1,022,037—Vehicle Hound. Michael F. Meath, Sadorus, Ill.
- 1,022,042—Vehicle Washer. Edward Muller, East New Durham, N. J.
- 1,022,151—Trackless Power-driven Vehicle. Isaac E. Palmer, Middletown, Conn.
- 1,021,796—Automobile Fender. John P. Randerson, Albany, N. Y.
- 1,022,707—Compensating Steering Gear. Edward T. Reichert, Jr., New York, N. Y.
- 1,022,262—Door Opening Device for Vehicles. E. B. Rhodes, Pittsburgh, Pa.
- 1,022,333—Armored Tire. Victor A. Rouillard, assignor of one-half to A. L. Audet, Fall River, Mass.
- 1,022,266—Wagon Box. Elmer A. Saltzman, Noble, and E. Krabill, Wayland, Iowa.
- 1,022,281—Starting Device for Internal Combustion Engines. Frank H. Walker, Atwood, Kas.
- 1,022,013—Fifth Wheel for Vehicles. Frank E. Wilcox, Mechanicsburg, Pa.
- 1,021,812—Starting Device for Explosive Engines. Edward M. Wood, Worcester, Mass.
- 1,022,999—Automobile Shaft Coupling. John N. Bashaw, Lake Geneva, Wis.
- 1,022,651—Buffer for Automobile Doors. Lewis A. Bedard, Boston, Mass.
- 1,022,820—Starter for Internal Combustion Engines. George G. F. Boswell, assignor of one-half to J. L. Peetz, Indianapolis, Ind.
- 1,022,719—Wind-shield Frame. Stewart Brown, Chicago, Ill.
- 1,022,401—Control Lever for Automobiles. Louis Chevrolet and E. Planche, assignors to Chevrolet Motor Company, Detroit, Michigan.
- 1,023,007—Automobile Door. Lucian R. Colbert, Massaponax, Va.
- 1,022,775—Vehicle Spring. Frederick Denman, Highland Park, Ill.
- 1,022,538—Starting Device for Gas Engines. Carl E. Dunham, Mad-dock, N. D.
- 1,023,010—Spring Wheel. Harry E. J. Foerster, St. Louis, Mo.
- 1,022,642—Detachable Rim for Resilient Tires. John W. Hall and B. C. Haynes, London, Eng.
- 1,022,735—Resilient Tire. Emil E. Hoff, San Rafael, Cal.
- 1,022,634—Electric Searchlight for Automobiles. Charles A. Lewis, Denver, Colo.
- 1,022,589—Automobile Headlight. Edgar J. Lutwyche, Chicago, Ill.
- 1,022,430—Spring-wheel for Vehicles. Frederick W. Margetts and W. H. Margetts, East Dulwich, Eng.
- 1,022,490—Draft Equalizer. Phillip B. Martin and H. Dahlenburg, Avon, S. D.
- 1,022,689—Resilient Tire. Hans A. Meinhardt, Pittsfield, Mass.
- 1,023,025—Vehicle Wheel. Byron W. Miller, Colorado Springs, Colo.
- 1,022,966—Resilient Tire. Harry B. Montgomery, Harrisburg, Pa.
- 1,023,026—Automobile Light Turner. Ward G. Moxley, Ravena, N. Y.
- 1,022,639—Brake. Frank O'Brien, assignor to The Lewis Spring & Axle Company, Jackson, Mich.
- 1,022,751—Motor Controlling Mechanism for Motor Vehicles. James W. Packard, Lakewood, N. Y., assignor, by mesne assignments, to Packard Motor Car Company, Detroit, Mich.
- 1,022,696—Combined Back Rest and Wind Shield. Isaac E. Palmer, assignor to The I. E. Palmer Co., Middletown, Conn.
- 1,022,754—Spring Wheel for Vehicles. Augustus F. Priest, Chicago, Ill.
- 1,022,506—Brake Mechanism for Vehicles. Francois Rolland and E. Pihan, Tours, France.
- 1,023,098—Spring Wheel. Louis Schilling, Maeystown, Ill.
- 1,022,567—Resilient Hub for Vehicle Wheels. Earl J. and I. G. Seig-fried, Findlay, Ohio.
- 1,022,885—Resilient Wheel. Arthur Sherwood, Plantsville, Conn.
- 1,023,045—Automobile Truck. David E. Shipley, Joplin, Mo.
- 1,022,648—Spring Wheel. Elmer E. Wickham, Windsor, Mo.
- 1,022,913—Bolster for Vehicles. Roy J. Woodward, Fresno, Cal.
- 1,023,779—Vehicle Tire. Sherman T. Allen, assignor to Triplex Tire Company, Detroit, Mich.
- 1,023,712—Tire for Vehicle Wheels. John Balasz, assignor of one-fourth to U. Mihail, one-fourth to M. Balint, and one-fourth to G. Heikel, Michel, B. C., Canada.
- 1,023,497—Resilient Vehicle Wheel. Frank H. Beamer, Buffalo, N. Y.
- 1,023,414—Armor for Vehicle Tires. Jeremy B. Coonrod, Rock Rapids, Iowa.
- 1,023,416—Resilient Wheel. Daniel L. Crosbie, assignor of one-third to J. D. Cornell and V. J. Bartels, Sacramento, Cal.
- 1,023,553—Change-speed Gearing. Paul Daimler, Cannstatt, assignor to Daimler Motoren-Gesellschaft, Stuttgart, Germany.
- 1,023,554—Tire. Milton E. Davis, Canastota, N. Y.
- 1,023,728—Pneumatic Tire for Vehicle and Other Wheels. Carroll D. Galvin, Merchantville, N. J., assignor of one-sixth to C. Jacobsen, one-sixth to E. S. Cochran, and one-sixth to A. F. Jorss, Washington, D. C.
- 1,023,733—Vehicle Tire. Joseph E. Goodman and E. S. Ruff; said E. S. Ruff assignor to B. S. Goodman, Stockton, Cal.
- 1,023,516—Pneumatic Wheel. Wm. W. Guest, Alameda, Cal.
- 1,023,519—Vehicle Lamp. Richard G. Harris, assignor of one-half to F. M. Hambright, Knoxville, Tenn.
- 1,023,471—Automobile Number Plate. Peter M. Hoffman, Chicago, Ill.
- 1,023,255—Antiskidding Device for Automobiles. Edmund Kron, Milwaukee, Wis.
- 1,023,212—Starting Motor Vehicle Internal Combustion Engines. Charles W. Mallins, Liverpool, England.
- 1,023,580—Antiskid Device. Douglas J. Martin, New York, N. Y.
- 1,023,393—Fender for Automobiles. Waldo F. Perez, Tampa, Fla.
- 1,023,225—Muffler for Automobiles. Maris Schlosberg, assignor of one-half to M. Cleland, Chicago, Ill.
- 1,023,770—Spring Tire. Emanuel Steimle, Salt Lake City, Utah.
- 1,023,598—Vehicle Wheel. Louis K. Stephens, Dallas, Tex.
- 1,023,344—Elastic Tire for Vehicle Wheels. Charles F. Waldman, Los Angeles, Cal.
- 1,023,263—Axle. Joseph L. Walker, Baton Rouge, La.
- 1,023,190—Side-dump Body. Thomas Wright, Jersey City, N. J.
- 42,354—Vehicle Body. Wm. H. Douglas, Belleville, N. J.
- Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, solicitor of patents, Fendall Building, Washington, D. C.

## Patents Expired July 9, 1912

- 542,236—Thill Coupling. Stephen H. Brokaw and Floyd S. Nicholson, Hornellsville, N. Y.
- 542,324—Wagon. Harwell L. Bennett and Russell R. Adams, Westerville, Ohio.
- 542,330—Hub. Edward O. Bryden, Chicago, Ill.
- 542,336—Pneumatic Tire Fastener. Ernest L. Ferguson, Chicago, Ill.
- 542,752—Vehicle Seat Lock. Thomas L. Pfeigor, Burlington, Pa.
- 542,588—Wheel. George C. Hale, Kansas City, Mo.
- 542,607—Vehicle Axle. John H. Curl and William G. Cummins, McMinnville, Tenn.

## Patents Expired July 16, 1912

- 542,644—Blacksmith's Forge. Karl Hitzberger, New York, N. Y.
- 542,662—Thill Coupling. William Pearce, Plantsville, Conn.
- 542,671—Thill Coupling. Alfred H. Worrest, Lancaster, Pa.
- 542,678—Wheel. Francis J. Freese, Lowell, Mass.
- 542,752—Vehicle Tire. Alexander T. Brown, Syracuse, N. Y.
- 542,811—Pneumatic Tire. Robert P. Scott, Cadiz, Ohio.
- 542,883—Vehicle Axle Point. William G. Ford, Tyler, Tex.
- 542,893—Bracket for Attaching Springs to Vehicles. William J. Kauffman, Miamisburg, Ohio.
- 542,923—Thill Coupling. William H. Byrne, Piedmont, Wyo.

## Patents Expired July 23, 1912

- 542,999—Folding Top for Vehicles. Heman F. Douglass and William J. Slyder, Troy, Ohio.
- 543,038—Vehicle Spring. Alexander L. H. Messmer, Gardner, Mass.
- 543,059—Axle Setting Device. Jacob F. Shultz, San Jacinto, Cal.
- 543,297—Valve for Pneumatic Tires. Joseph E. Davis, Lynn, Mass.
- 543,310—Vehicle Wheel. Godfried Laube, Huron, S. D.
- 543,320—Axle Box for Carriage Wheels. Hermann Schuppisser, Zurich, Switzerland.
- 543,337—Pneumatic Tire. William Driesback, Williamsport, Pa.
- 543,368—Carriage Axle. Samuel R. Bailey, Amesbury, Mass.
- 543,386—Pneumatic Tire. Arthur A. King, Aurora, Ill.
- 543,438—Carriage Lamp. Sherman Cooper, Westfield, N. J.
- 543,166—Thill Coupling. Joseph E. Whidden, Whitmore, Mass.

## Patents Expired July 30, 1912

543,532—Automatic Wagon Brake. Jesse Kirlin, Stuart, Iowa.  
 543,534—Thill Coupling. Benjamin P. Maloney, New Market, Va.  
 543,615—Thill Coupling. Anthony Dibrell, Uvalde, Tex.  
 543,704—Tire for Vehicles. Alexander J. Rudolph, San Francisco, Cal.  
 543,754—Brake Mechanism for Vehicles. Charles Sample, Valley Grove, W. Va.  
 543,809—Combined Shears, Punch and Tire Shrinker. Hollis W. Moore, Olean, N. Y.

## Patents Expired August 6, 1912

543,862—Wheel Tire. Christian H. Gray, Silvertown, England.  
 543,956—Wagon Body. Bowdan L. Bibb, New Providence, Tenn.  
 543,977—Thill Coupling. Elias A. Benner, Nobletown, Pa.  
 544,136—Vehicle Step. Henry C. Swan, Oshkosh, Wis.  
 544,155—Fifth Wheel. William P. Champney, Cleveland, Ohio.  
 544,171—Hub Cap. Henry Higgin, Newport, Ky.  
 544,181—Hub Attaching Device. Hartwell T. Lewis, Calumet, Mich.  
 544,205—Thill Coupling and Support. Charles H. Anspach, Cedar Grove, Ind.

544,217—Cushion Tire for Vehicle Wheels. Howard M. DuBois, Philadelphia, Pa.  
 544,225—Wagon Bed Attachment. Hezekiah M. Hickman, Wellington, Kas.

544,237—Elastic Tire for Vehicle Wheels. William J. Ryan and James A. Murphy, Holyoke, Mass.

544,271—Running Gear for Wagons. James Bennett, Greencastle, Ind.

## Patents Expired August 13, 1912

544,309—Vehicle Brake. Adolf Kletsch, Gorlitz, Germany.  
 544,435—Brake Beam. James Howard, New York, N. Y.  
 544,592—Thill Support. Edward Rodier, New York, N. Y.

## Patents Expired August 20, 1912

544,664—Wheel and Axle for Carriages. Isaac Davis, Armadale, Victoria.

544,672—Vehicle. William E. Karns, Parker's Landing, Pa.  
 544,710—Clip King Bolt for Vehicles. Darius Wilcox, Mechanicsburg, Pa.

544,788—Thill Coupling. Lucien R. Hertert, Pierce, Neb.

544,822—End Gate for Wagons. Ira Nappin, Farmington, Ill.  
 544,910—Thill Coupling. George A. Fenn, Watertown, Conn.

## Patents Expired August 27, 1912

545,065—Combined Thill Support, Antirattler and Coupling. Walter L. Fraser, San Diego, Cal.

545,126—Hub Attaching Device. Florian Lebel, Montreal, Canada.  
 545,136—Vehicle. John R. Simms, Milton, Cal.

545,280—Elastic Tire for Vehicle Wheels. Patrick Fitzgerald, Springfield, Mass.

545,375—Rim for Vehicle Wheels. Eugene H. Olds, Fort Wayne, Ind.

## Patents Expired September 3, 1912

545,476—Sulky. Edward S. Frazier, Aurora, Ill.  
 545,491—Wagon Running Gear. Thomas Grimmitt, Rockford, Ill.

545,506—Metallic Fastener for Pneumatic Tires. James L. Johnson, Fort Madison, Iowa.

545,508—Vehicle Shaft Supporter. Charles G. Kilek, Columbus, O.  
 545,522—Vehicle Wheel. Stephens Neal, Talbotton, Ga.

545,707—Storm Curtain for Buggies. Bernard Martin, McPherson, Kas.

545,713—Storm Curtain for Buggies. Wheeler M. Morrison, West Union, Ohio.

The above lists of patents, trade marks and designs of interest to our patrons are furnished by Davis & Davis, solicitors of American and foreign patents, Washington, D. C., and St. Paul Building, New York City.

## AUTOMOBILE HOODS

The maintenance of the brilliancy of the enamel leather hood of a motor carriage is often a matter of difficulty. As the hides generally used for the purpose are specially dressed to be supple, and after coated with a japan and stove enameled, any oil or grease applied destroys this enamel, and water gets into the leather. Comparatively new motor carriages have been found with the inner roof lining soaking wet when running during rainy weather. Enamel leather hoods should be carefully washed with clean water, and dried with a chamois leather, and afterwards rubbed with a clean, dry cloth. Where the folding creases show, it will be sufficient if a little liquid harness composition is carefully rubbed in and polished off with a soft brush and cloth.

## Wants

Help and situation wanted advertisements, one cent a word; all other advertisements in this department, 5 cents a word; Initials and figures count as words. Minimum price, 30 cents for each advertisement.

## PATENTS.

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## OBITUARY

**John M. Carpenter, Sr.**, 79, secretary and treasurer of the Excelsior Carriage Co., Watertown, N. Y., died August 26, after a prolonged period of ill health. Mr. Carpenter was born and educated in Watertown. In early life he engaged in mercantile business which he continued for 25 years, selling out to become interested in the Watertown Spring Wagon Co., acting as secretary and treasurer of that company for twelve years. He was one of the organizers and principal stockholders in the Excelsior Carriage Co. when it was formed in 1889. From then until the time of his death he was the secretary and treasurer of the company. Early in life he affiliated with the Republican party and held many offices, among them being that of village president, county treasurer, president of the board of public safety, and police commissioner, serving in the latter capacity for 25 years, retiring only a short time ago. Two sons and four grandchildren survive.

**Victor C. Wattles**, of the pioneer vehicle firm of Wattles & Son, is dead at his home in Battle Creek, Mich.

**B. M. Lackey**, 38, one of the owners of the Kentucky Carriage Works at Richmond, Ky., is dead from apoplexy. His wife and one child survive.

**George Ely**, 87, the oldest carriage builder in Champaign County, Ill., died August 23, after a lingering illness due to old age and kidney trouble. He was born in Kempton, Bavaria, and came to this country in 1856. He is survived by ten children.

## HORSES STILL IN DEMAND


That animal traction for heavy road and contract work is as much in demand as ever was demonstrated recently in York, Pa., when one of the largest sales of mules ever made in York was consummated by Joseph Kindig. Thirty-four head of big mules were sold. The price paid was more than \$10,000.

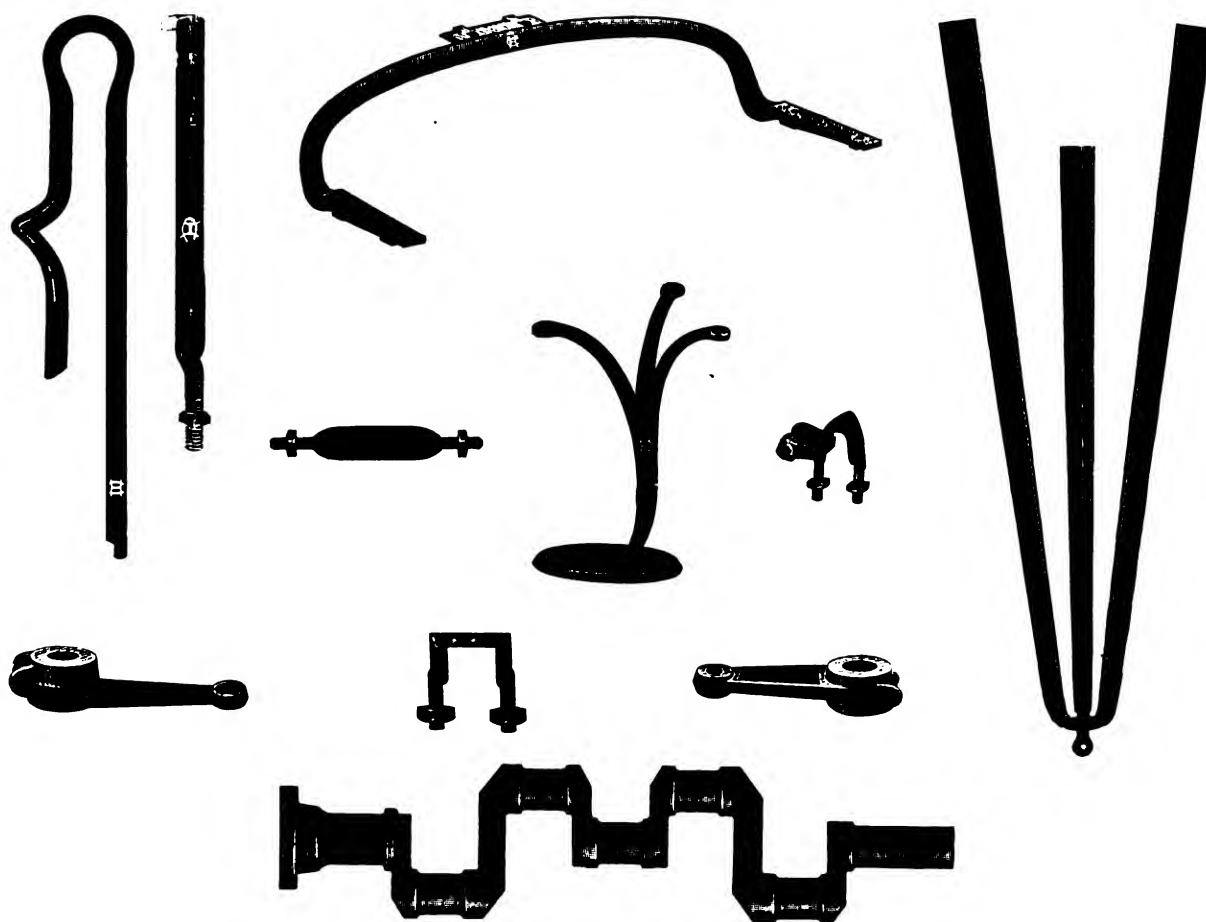
## RUBBER

So long as rubber commanded a high price, considerable importance attached to other plants than *Hevea Braziliensis* which furnished even a relatively small amount of this material, since the profitable separation of the rubber from resins and other foreign substances naturally associated with it in the latex was commercially possible. With a very considerable fall in the price of rubber, and with a greatly enhanced production of first class rubber, these secondary and inferior sources of the material are less likely to be of importance. A number of such products are alluded to, some of which also relate to gutta-percha, which is closely allied in some respects to rubber, and was once very extensively employed and purchased at a high price for certain electrical purposes. Now, however, the commercial position of gutta-percha is greatly changed, owing to the fact that rubber itself, in combination with other substances, can be employed for many of those purposes for which gutta-percha was not long ago alone suitable.

Lastly, reference is made to the investigations into the value of the seeds of the Para rubber tree as a source of oil. It is now some years since the oil contained in these seeds was first investigated as to its composition and uses. It was shown that the kernel of this seed contains nearly half its weight of oil. This oil was found closely to resemble linseed oil in its composition and properties, falling into the class of drying oils, which are used in the manufacture of paints. It was shown that this oil would command about the same value as linseed oil, and that there would be a considerable demand for it as a substitute for linseed oil. With the maturing of large rubber plantations all over the world, the need for seed for planting is rapidly diminishing, and an enormous quantity is becoming available.

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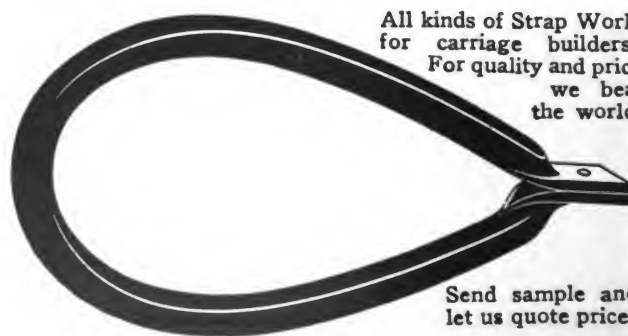
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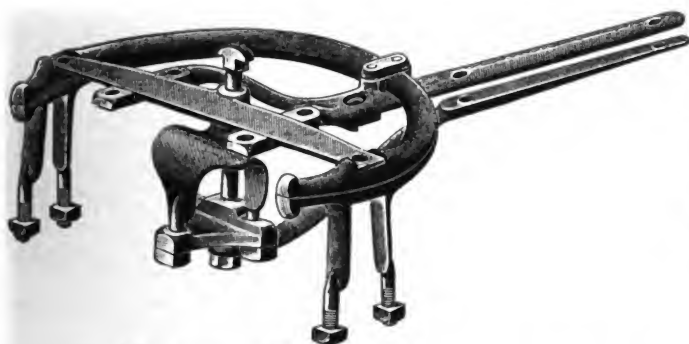


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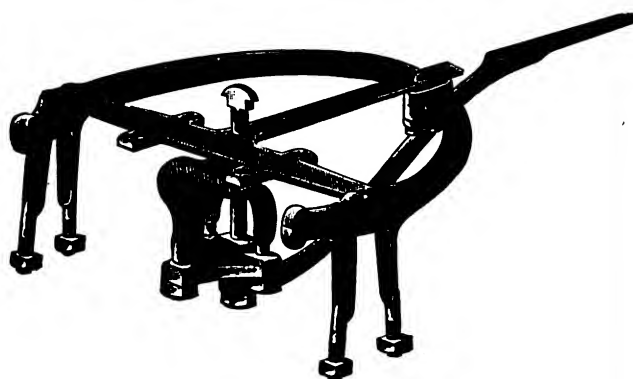
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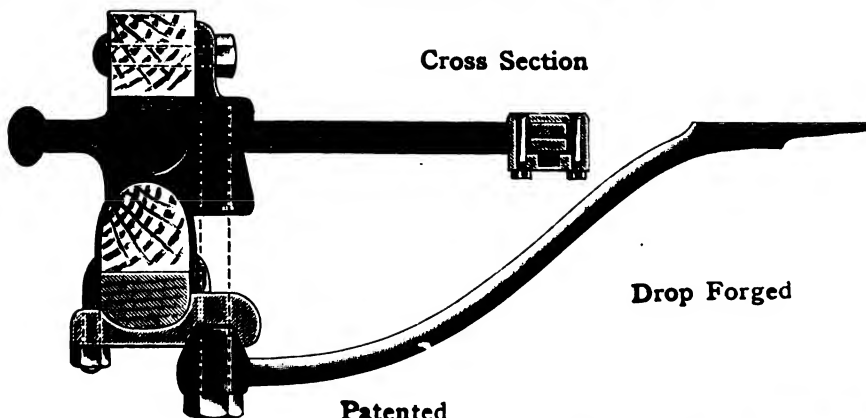
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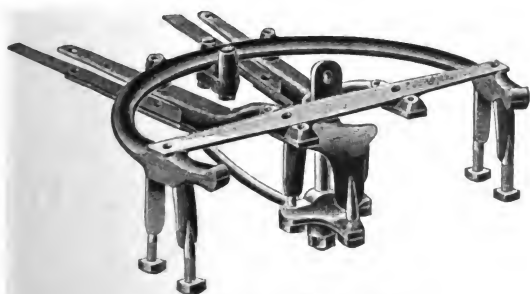
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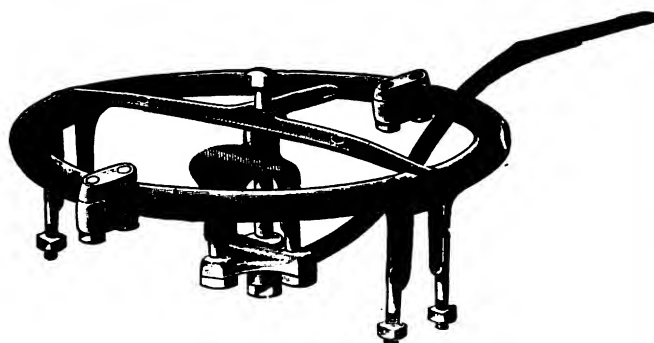
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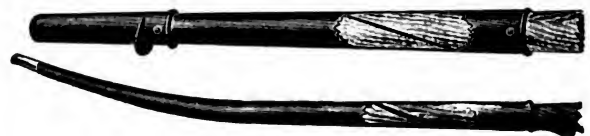
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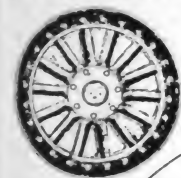
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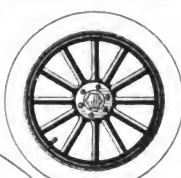


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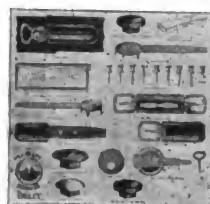
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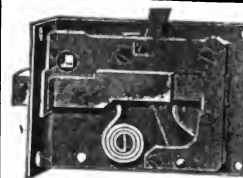
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 We match Rails to  
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**Goshen Eyelet Co.**  
Manufacturers of  
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**Carriage Trimmers' PASTE**  
Fourteen years the standard  
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**"TRIM-STICK"**  
A Sure-Sticking Dry Product That  
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Auto and Carriage  
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Fenders, Gasoline Tanks, Japanning Ovens  
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\$2.00 a year. Trade News Pub. Co., New York, N.Y.

**Richard Eccles Co., Auburn, N.Y.**

Manufacturers of

Forgings: Carriage, Wagon, Automobile' Special

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MAKES A PERFECT

**ROUGHSTUFF**

For Automobile Bodies and Parts

It fills the pores of Metal and Wood perfectly. Sand-  
papers easily and produces a fine, smooth surface  
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**PORTER'S BOLT CLIPPERS**

"Easy" "New Easy" Allen-Randall



To Cut 5-16, 3-8, 1-2, 5-8, 3-4 inch.

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Fit either straight side or clincher tires. Two turns  
of a nut unlocks the rim for demounting, two more turns  
locks the rim in place. Write for catalogue 609.

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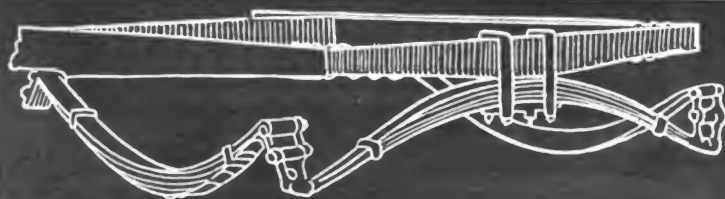
**AKRON, OHIO**

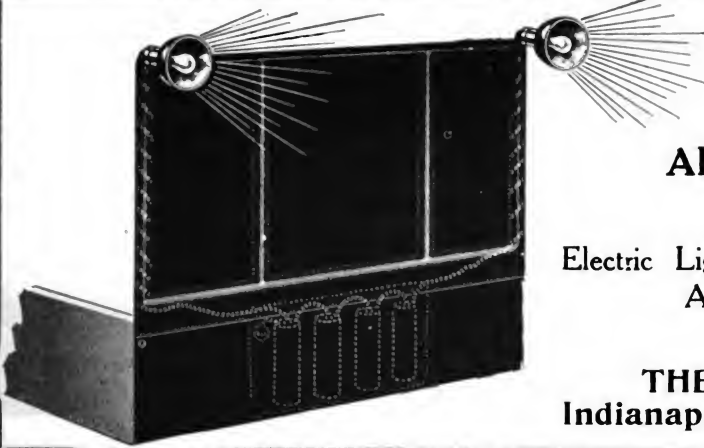
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Manufacturers of

### All kinds of LEATHER DASHES and FENDERS

Electric Light Equipment which can be put on any style Dash  
Also three-light equipment for Storm Buggies

Prices on Application

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Indianapolis - - - Indiana

**NOVELTY TUFTING  
MACHINE COMPANY**

**TUFTING MACHINE  
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New Location of Their Executive Offices at

**268 JEFFERSON AVE. EAST, DETROIT, MICHIGAN**

At this address we carry a full line of Tufting Presses, Button Holders, Plaiters, Clinch Buttons, Washers, Areameters, etc.

We will also operate a modernly equipped department for the manufacture of MOULDS OF EVERY DESCRIPTION. This will enable us to quote lower prices than ever before.

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We carry the Largest and Best assorted line of stock DECALCOMANIE in the World.  
Special designs of all kinds, Name Plates, Seat Users etc., etc.

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Top Fabrics, Transparent Fibre, Brass Fittings, Forgings, Leather, Cloths, Carpets,  
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Let Us Show You the Goods, or Write Us for Attractive Prices

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THE HUB**

**It Pays  
Others**

**It Should  
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## Solid Tires

Shrewd manufacturers do not take the trouble or assume the risk of exploiting an unknown or unproved tire. They adopt Kelly-Springfield, which goes through without argument or question because it has made good for fifteen years.

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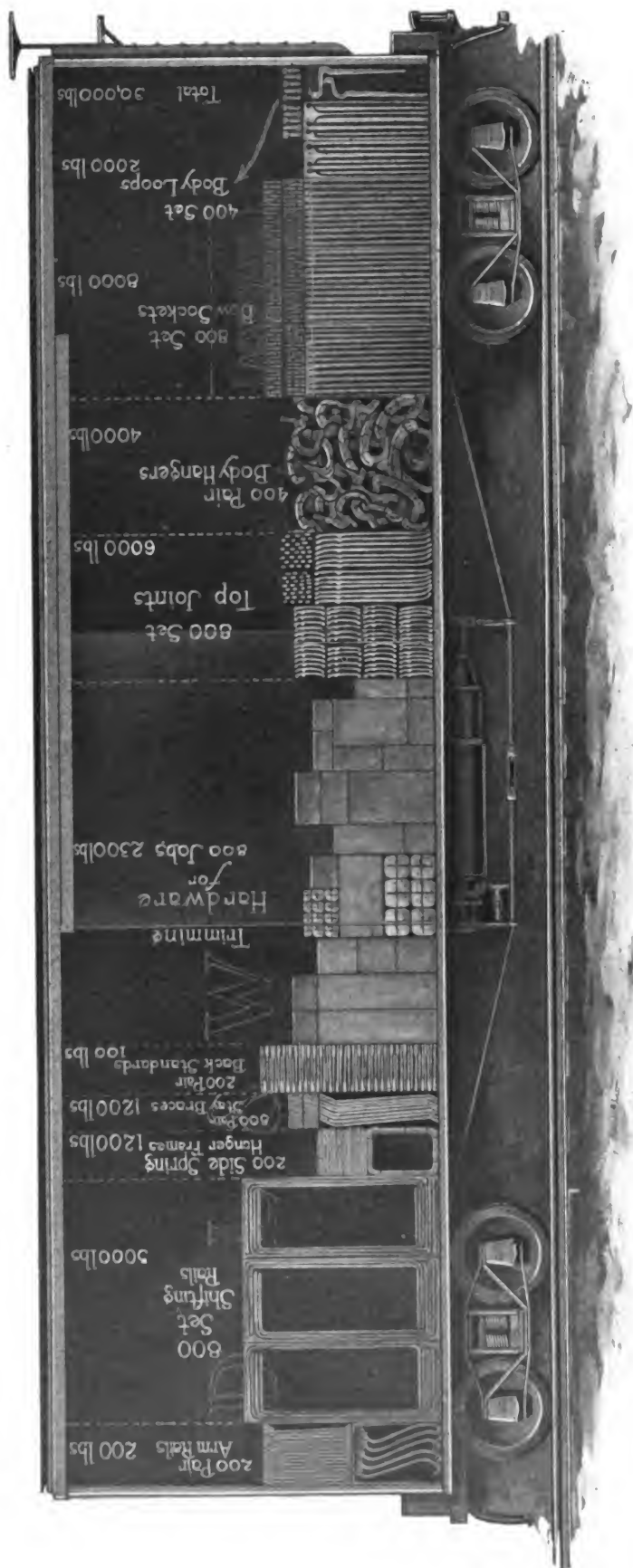


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A substantial saving in freight.  
Less time on the road.  
A small quantity of each item.

Less stock to pay interest on.  
Your stock room will be ready for the rush.  
Every item guaranteed, always highest quality.

No lost shipments.  
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**Best on Earth—KANTSAMORE**

ESTABLISHED 1855

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305-313 Market Street, Newark, N. J.

Branch Factory: 12th Avenue and 55th Street, New York City

**AUTOMOBILE WHEELS**

**For Pleasure Cars and Motor Trucks**

Repairing and truing old wheels a specialty. Experimental wheels a specialty. We furnish and apply any style demountable or detachable rim or tire.

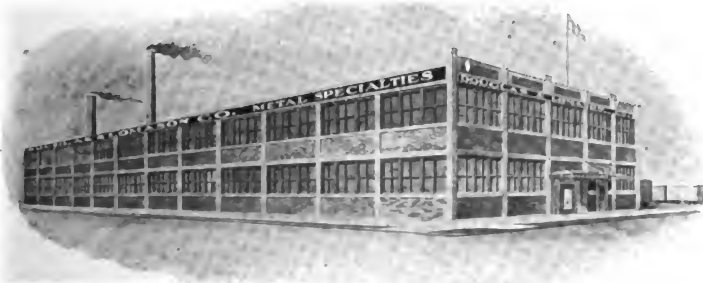
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MANUFACTURERS OF

**CARRIAGE RAILS, HANDLES and NAME PLATES**

BRASS WIND SHIELDS AND STORM FRONTS

AUTOMOBILE BRASS TRIMMINGS OF ALL KINDS



OUR NEW FACTORY  
Corner of Brooklyn Ave. and M. C. R. R. Belt Line

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DASH MOULDING

RUNNING BOARD

MOULDING

COAT RAILS, ROBE RAILS, MALLEABLE

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SHEET BRASS WORK, DOOR LOCKS,

ETCHED PLATES.

# IF YOU USE MONARCH BULL DOG REMOVER

You Know the Value of Time

By its use you remove all traces of the previous finish [*Varnish, Paint, Shellac, and air-dried or baked Enamels*] and at the same time give your attention to other work. . . . .

## MONARCH BULL DOG REMOVER

Works without injury to the wood or operator, and will remain moist from TEN to TWENTY - FOUR HOURS. . . . . *May we send you sample and descriptive booklet?*

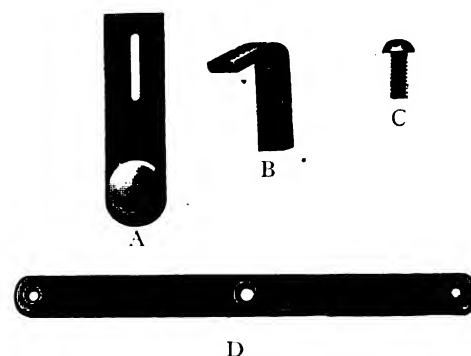
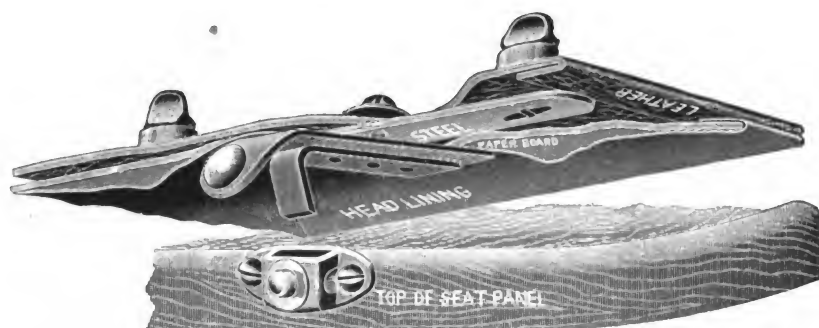
### CHAS. H. GILLESPIE & SONS

Jersey City

New Jersey

VARNISH MAKERS since 1824

# The Pickard Back Stay Attachment



For Securing Back Stays to Seat Where Shifting Rail is Dispensed With

The large cut shows the position of the various parts when assembled or in place in bottom of Backstay and also Socket attached on top of seat panel. In assembling, a 3/16 inch Screw (C) is put through the Backstay from the outside and passes through center hole in Plate D, likewise through Head Lining, slot in Strap A, and is turned into one of the threaded holes in hook, Part B. A washer is used under head of screw, and when the latter is turned in as far as it will go, the Strap A and Hook B are firmly secured on stay next to seat panel.

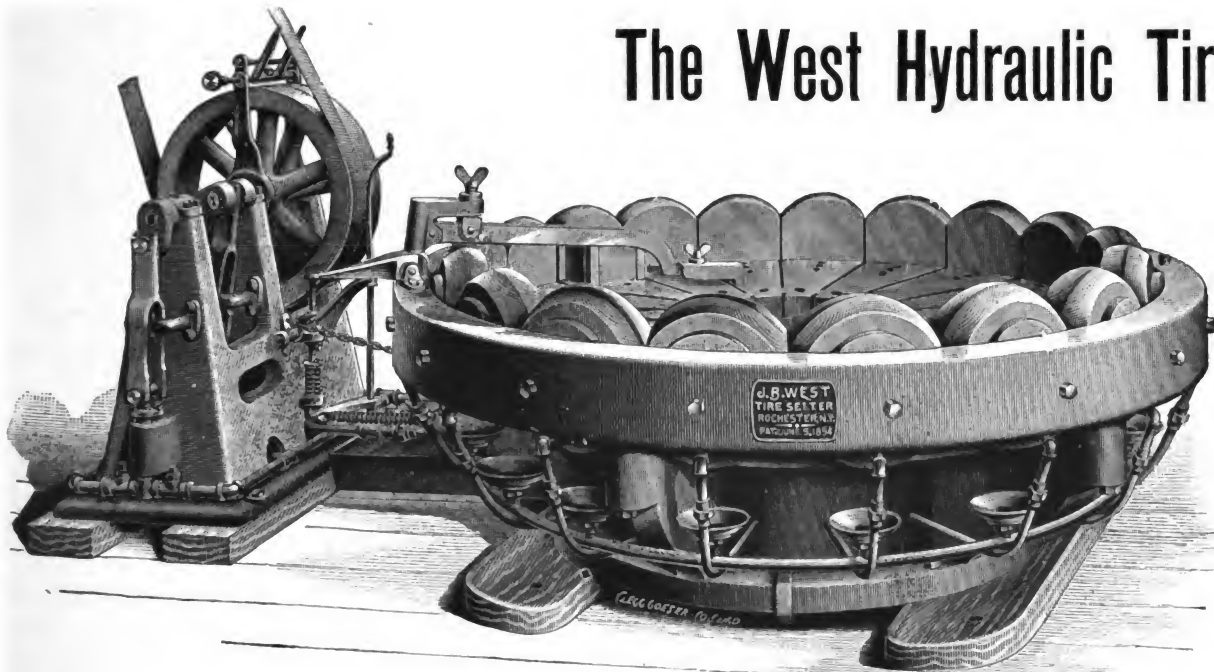
Part of a Snap Fastener is used on strap and part to match on top of Socket. The use of Strap is to keep Hook from becoming disengaged from Socket when top is down and stays are slack. When top is up the strain is on the Hook and it will not come out of socket. Backstays come close to seat panel and are held securely.

The Pickard Backstay Attachment can be used by any top maker, as socket is always put on after seat is trimmed and other parts can be applied in making up stays.

Our No. 13½ S Pioneer Fastener or Backstay Knobs, as preferred, can be used in the end holes of Plates. Plates are regularly supplied 4½ inches between outside holes. A set consists of two parts each A, B, C and D, two Brass Sockets for top of Seat Panel and two Washers to go under head of screws.

For prices write

## CRANDAL, STONE & CO., Binghamton, N. Y.



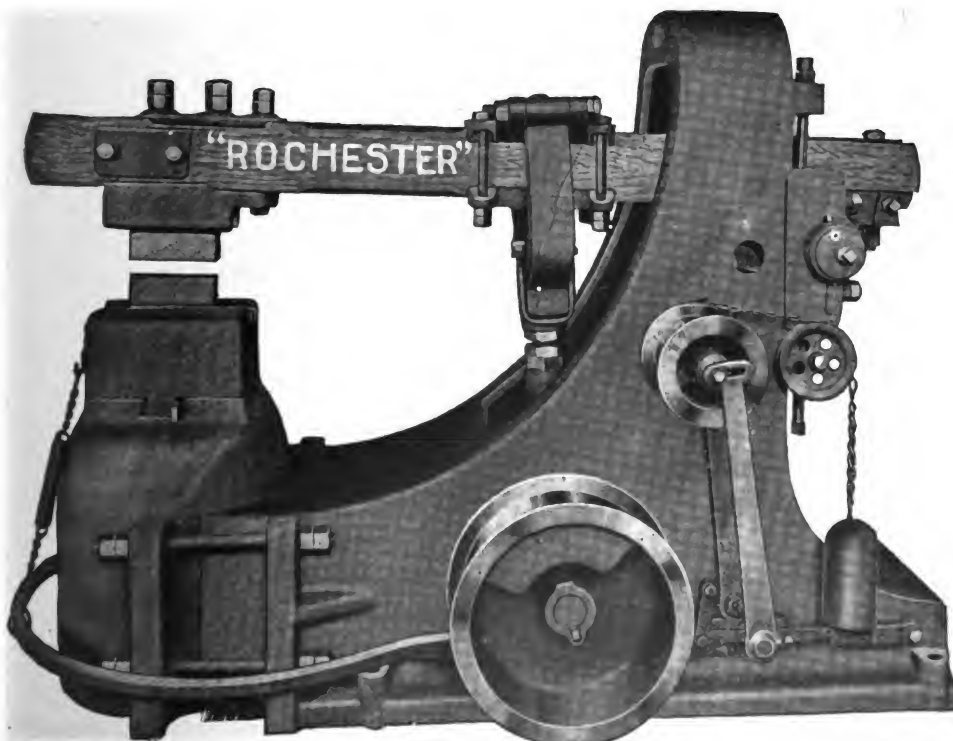
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"Progressive"  
people  
everywhere  
regardless  
of their  
political  
views

WILL POSITIVELY SET TIRES COLD BETTER THAN THEY CAN BE SET BY THE OLD METHOD OF HEATING AND SHRINKING, AND AT A FRACTION OF THE COST.

IF YOU ARE NOT USING ONE YOU BETTER INVESTIGATE.

## The "Rochester" Helve Hammer

was originally designed especially for the Carriage and Wagon making trade



IT IS HIGHLY EFFICIENT AND SOLD AT A REASONABLE PRICE. BUILT IN TWO TYPES OF FRAME AND SIX SIZES—25 LB. TO 100 LB. HEAD. FURNISHED WITH DIES SET LENGTHWISE OR CROSSWISE OF HELVE AS DESIRED. A FINE HAMMER FOR WELDING TIRES.

SEND FOR OUR CATALOG AND PRICES.

. . . The . . .

**WEST TIRE SETTER CO.**

Rochester, N. Y.

Please mention "The Hub" when you write.



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You can keep up the quality and keep down the cost on tops and trimmings of MERITAS LEATHER CLOTH.

We want you to have this sample book and see the quality of the goods.

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The MERITAS trade mark on the back of the goods guarantees the quality - look for it.

Drop a card now for the sample book.

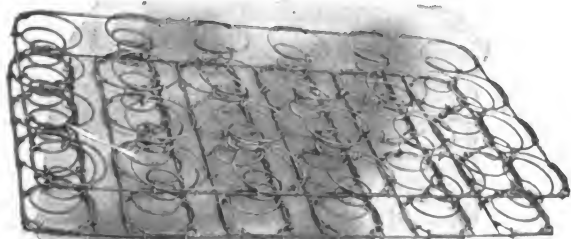
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**320 Broadway, NEW YORK**

## "BLACK VELVET" CUSHION SPRINGS

Manufactured Only by the  
**NATIONAL SPRING AND WIRE COMPANY**  
 ALBION, MICH. WINDSOR, ONT.

THE SPRING OF QUALITY.



**SPRING or SOFT EDGE CUSHION FRAME**  
 For Buggies or Other Vehicles. Built of the Highest  
 Grade of Steel Wire.



**STRIP FOR WOOD OR BOX FRAME**

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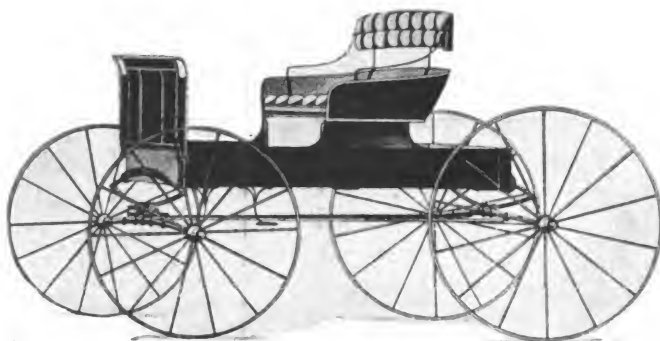
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· **QUALITY** ·  
 · **WORKMANSHIP** ·  
 · **MATERIALS** ·

IN

THE MANUFACTURING OF

**Buggies - Carriages - Sleighs**  
**Spring Wagons, etc.**



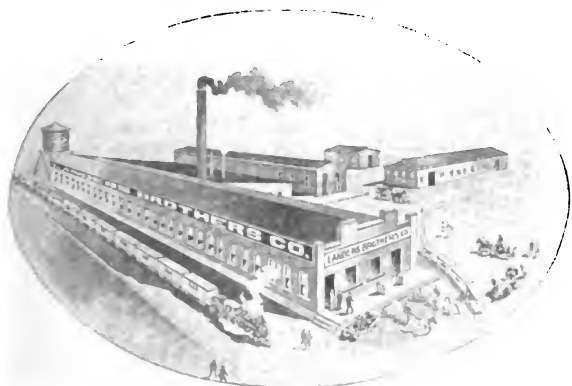
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**MIFFLINBURG, PA.**

WRITE FOR 1913 CATALOG

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**Mohair, Bow Lining**  
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COLORS TO MATCH



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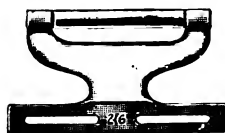
*We guarantee prompt shipments, best goods, lowest prices.*

**Landers Brothers Co.,**  
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**Largest Manufacturers of Roller Chafe Irons in the World**  
 We have just what you want for any vehicle, and  
 remember,

**WE SHIP PROMPTLY**



No. 32—For end spring jobs  
 with full length body loops.



No. 69—For Phaetons and  
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We also manufacture the cheapest and most durable  
**Automobile Muffler** in the world. Can be easily  
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**"We are Known as Prompt Shippers"**

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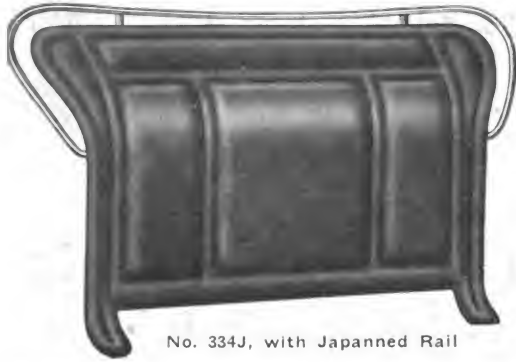
**UTICA, N. Y.**

# McKINNON DASH COMPANY

BUFFALO, N. Y.

TROY, OHIO  
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ST. CATHARINES,  
ONTARIO

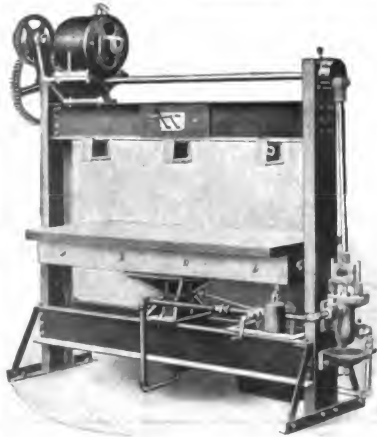


No. 334J, with Japanned Rail

## Japanned Rails

ARE IN GREAT DEMAND

On account of their attractive appearance  
and durability



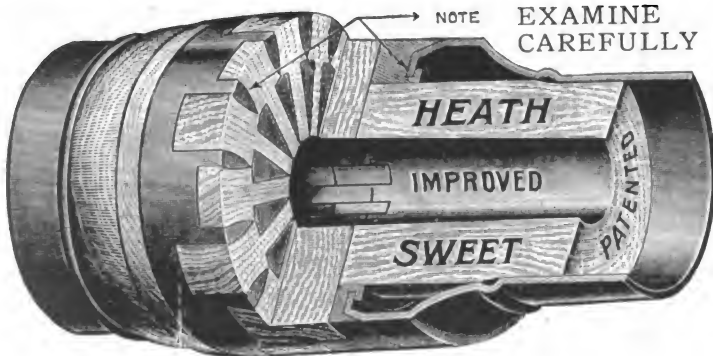
**Reduce the Cost of Production**  
50 per cent. in your Trimming Department by installing in your factory a Labor-saving, Modern

**BUSER-POSTON TUFTING MACHINE**

Write for Catalogue and prices of Hand and Power Presses, Button Holders, Plaiters and Mould Boards for Carriage and Auto work. See our Exhibit C. B. N. A. Convention, Atlantic City.



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You Won't Find a Flaw

Manufacture also

SWEET  
SARVEN

KENNEY  
SHELL

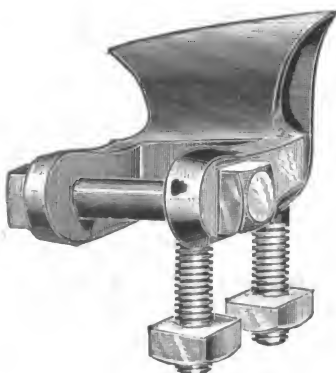
WARNER  
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and

## Automobile Wheels

SHORTSVILLE WHEEL CO.,

Shortsville, New York



## Skewed Shaft Couplings

Regular or Oval Patterns  
For High Arched Axles

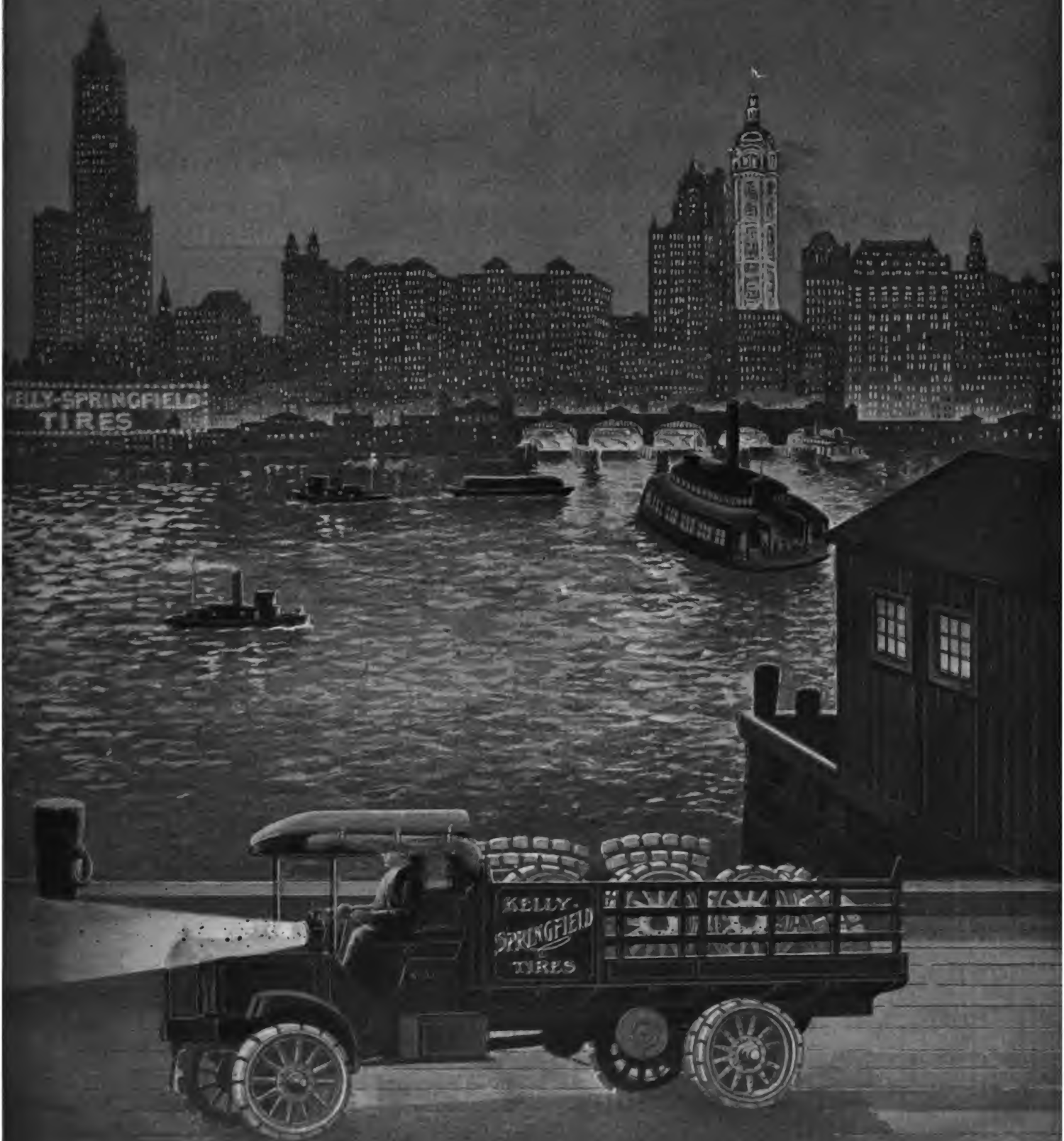
Furnished in rights and lefts for any height of arch. Oval Axle Clips  $\frac{5}{8}$  or  $\frac{3}{4}$  width to match Oval Couplings. Bolts, Clips, Couplings, Carriage Hardware and Special Forgings

Catalogue "H" and Prices on Application

COLUMBUS BOLT WORKS, Columbus, O.



# The Hub



TRADE NEWS PUBLISHING COMPANY  
24-26 MURRAY ST., NEW YORK

# **Hoopes Bro. & Darlington Inc.**

**West Chester, Penna., U. S. A.**

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**STAR or KENNY**

**Sweet Concealed Band**

**WOOD HUB**

**WARNER**

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**HEAVY and LIGHT  
for**

**CARRIAGES**

**WAGONS and**

**TRUCKS**

**IF YOU WANT THE BEST TRY OURS**

## **JOHN W. MASURY & SON**

**Originators of**

**Superfine Coach and Automobile Colors**

**Acknowledged the Standard for Fifty Years**

**AND MANUFACTURERS OF**

**Fine Carriage and Automobile Varnishes**

**New York,**

**Chicago,**

**Minneapolis,**

**Kansas City**

**NOVELTY TUFTING  
MACHINE COMPANY**

**TUFTING MACHINE  
SUPPLY COMPANY**

### **— ANNOUNCE —**

**New Location of Their Executive Offices at**

**268 JEFFERSON AVE. EAST,**

**DETROIT, MICHIGAN**

**At this address we carry a full line of Tufting Presses, Button  
Holders, Plaiters, Clinch Buttons, Washers, Areameters, etc.**

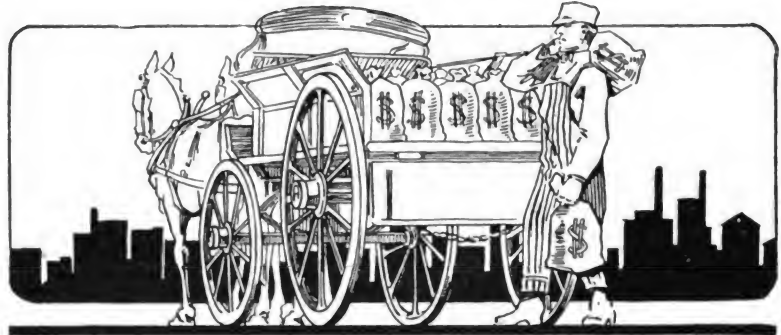
**We will also operate a modernly equipped department for the manufacture of MOULDS OF  
EVERY DESCRIPTION. This will enable us to quote lower prices than ever before.**



## Make More Money on the Wagons You Sell

**M**OTOR-HAULAGE has cut into horse-haulage, but the horse isn't extinct yet—not by a long shot. He's more numerous than ever and sells at a better price.

Thousands are still using horses and wagons for hauling, but their number is bound to decrease unless they can be shown that horse-haulage as against motor-haulage *pays*.



The one way for you to hold your present business and get more business is to *help the wagon-user increase the efficiency of his present horse-haulage.*

That means:

Hauling bigger loads with the same horse, or  
Hauling the same loads with a lighter horse, or  
Hauling the same loads with fewer horses, and  
Cutting down repair and upkeep costs.

Timken Roller Bearing Axles in a wagon accomplish the very things that *help you to sell more wagons and get a better profit from their sale.* Catalog No. 12 tells the story. Write for it.

**The Timken Roller Bearing Company**  
CANTON, OHIO

New York Branch, 68th and Broadway      Chicago Branch, 1347 S. Michigan Ave.

*Timken Roller Bearings are used in a big majority of all motor cars. Pleasure and Commercial Car Axles and Jackshafts with Timken Roller Bearings are made only by the Timken-Detroit Axle Co., Detroit.*



204

**SPRINGS  
FORGINGS**

**BRAKE LEVERS  
AXLES**

# THE Birthplace OF High Grade Automobile Parts

**THE LEWIS SPRING & AXLE COMPANY**  
JACKSON, MICHIGAN

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Manufacturers of High Class Pigment Colors  
from ORIGINAL FORMULAE. Colors ground in  
Japan and other MEDIUMS to meet any  
SYSTEM of APPLICATION

### AUTOMOBILE PAINTING

Our Automobile Color Book just issued showing latest shades for this  
class of work mailed upon application.

## WILLEY'S COLORS

The **RECOGNIZED STANDARD**



## C. A. WILLEY CO.

**COLORS GRINDERS**

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**CARRIAGE, AUTOMOBILE AND CAR**

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**COLORS, VARNISHES, ETC.**

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## KING EDWARD HOTEL IN NEW YORK

At Broadway and Long Acre Square  
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**Absolutely Fireproof**

**350 ROOMS      250 PRIVATE BATHS**  
**Every Modern Convenience**  
**European Plan Exclusively**

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Rooms for maids and valets.....	\$1.00
Each additional person in same room.....	\$1.00 extra
Suite—parlor, two bedrooms and bath.....	\$5.00, \$6.00
Suite—parlor, bedroom and bath.....	\$4.00, \$5.00
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**VICTOR HOTEL COMPANY, Limited**  
**C. A. Hollingsworth, President**  
**NEW YORK CITY**



This startling photograph shows the difference in resisting qualities between ordinary varnishes and

### **Valentine's Vanadium Chassis Finishing**

It is our automobile wheel exhibit at the Shows. It is varnished on half its spokes with a well known gear varnish, and on the other spokes with our Chassis Finishing. It is then revolved for several hours in soapy water. The ordinary gear varnish is destroyed. Chassis Finishing is absolutely unharmed. It is the **only** varnish that resists soapy water, mud, road oil, etc.

Send for a free sample of Vanadium Chassis Finishing.

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343 S. Dearborn St.  
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# METAL BODY MACHINERY

of PETTINGELL PATENTS forms the largest, if not the entire equipment of most every automobile body plant in the United States. This surely denotes superiority of the Pettingell line. These machines are also extensively used to do first class work in getting out body stock and frame work.

WRITE FOR CATALOGUE



**NEW AUTOMATIC POWER HAMMER**

Designed and made especially for Aluminum or Metal Body Work; gives plenty of room to form or turn body panels, seats, wide backs, etc. Is designed and built to run at a high rate of speed, and the peculiar construction with springs and belts preserves the bearings, pins and screws from racking or breaking.



**IMPROVED METAL ROLLER FORMER.**

A solid, substantial machine, all metal, with cut gears. Will make any curve or various irregular curves on Mud Guards, Metal Panels, Seats, Etc.



**HAND MOULDING OR BEADING FORMER.**

Will form moulding or beading any size or shape, cuts all metals, will fold in wire around edge of metal and turn over flanges, etc. Intended for use in factories and shops where small machines are needed for much of the work that can be done quicker and easier than on large power machines, and also for many shops where they have not power or facilities or do not wish to put in the large, powerful and more expensive machines.

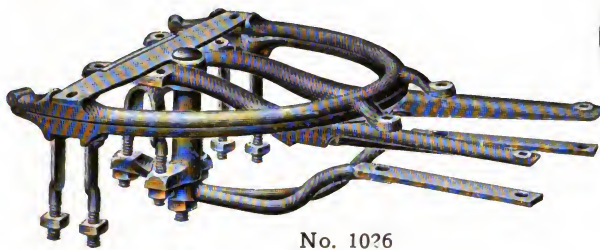


**POWER MOULDING OR BEADING FORMER**

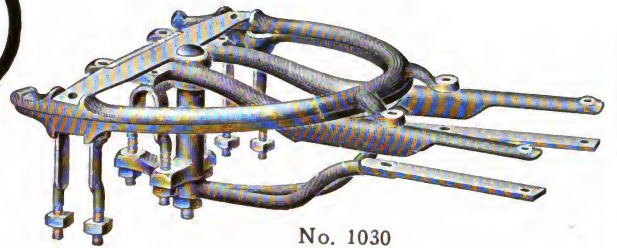
A big improvement over any machines formerly used for forming, beading or moulding; cutting all metals; turning over flanges or folding in wired edge of metal, or any part of the work, and combines three machines in one. Adjustable every way and quickly changed for any work. Designed and built to handle all kinds of metal, aluminum, sheet steel, copper or tin.

**THE PETTINGELL MACHINE CO.**  
**AMESBURY, - - - - - MASSACHUSETTS**



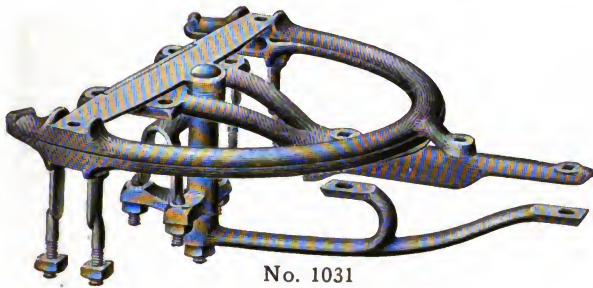


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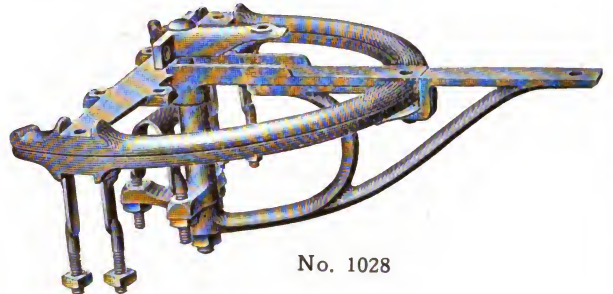
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## Malleable Iron Fifth Wheels



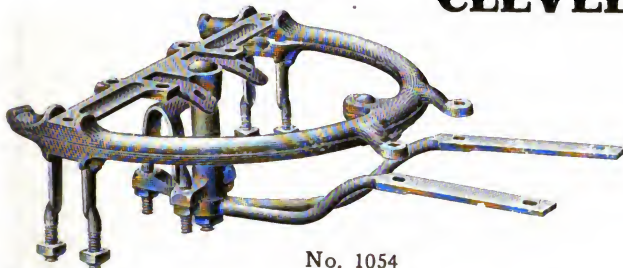
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Made  
by

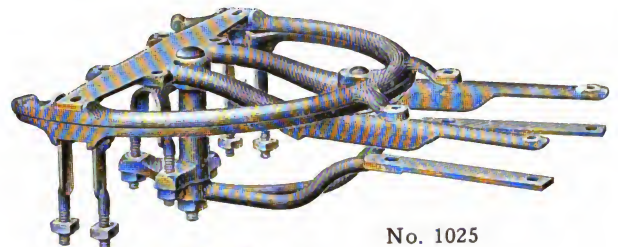


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**The Eberhard Mfg. Co.**  
CLEVELAND, OHIO



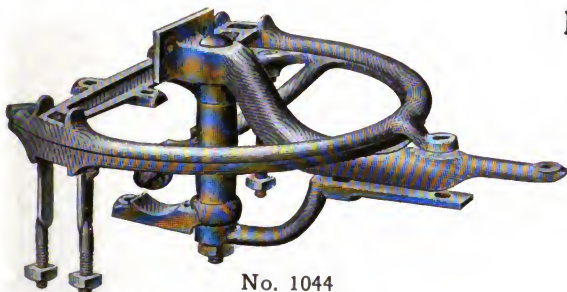
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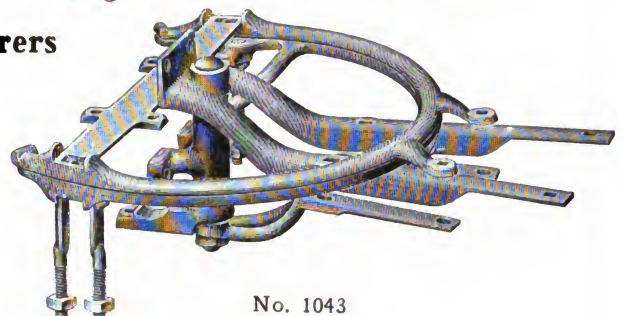
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Manufacturers

of

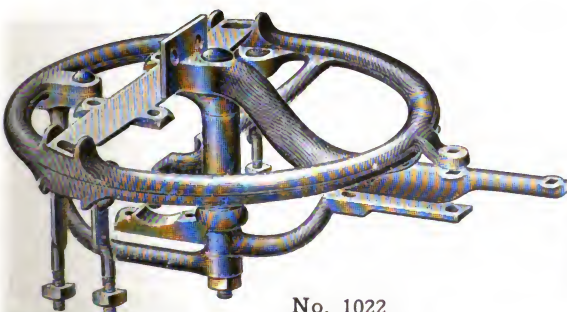


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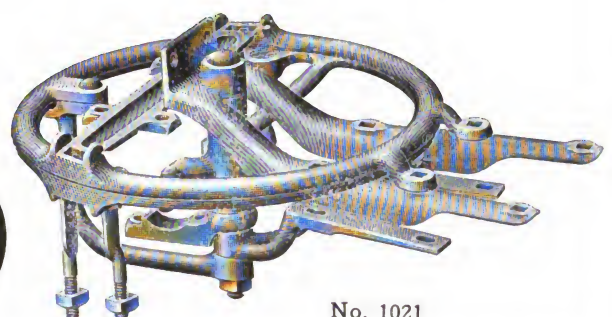


No. 1043

## Carriage and Wagon Hardware



No. 1022



No. 1021



Quality  
Is  
Economy

*We don't make Bargain - Counter Varnishes.*

*We make Varnishes which give The Best*

*Possible Service - and they are Bargains.*

We don't try to reach the Lowest Price.

Everybody knows what you get with Lowest Price—Poorest Varnish, most Trouble and Delay, Certain Loss of Good Will and Good customers.

We will not put *our* customers to these needless irritations and expenses.

Our constant study is to build up *your* business and make *your* reputation enviable, by making sure that *your* Cars and Carriages and Wagons have the Finest, Handsomest and most Durable Finishes.

Is this a matter of Benevolence?

Not a bit of it.

It is plain business policy.

It sells Murphy Finishing Materials.

It makes you a free and perpetual advertisement for our goods.

It preserves and enhances the Murphy Reputation, which is one of our biggest assets.

The Varnish

That Lasts

Longest

**Murphy Varnish Company**

FRANKLIN MURPHY, President.

Associated with Dougall Varnish Co., Ltd., Montreal, Canada

NEWARK,  
N. J.

CHICAGO,  
ILL.

# The Hub

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Vol. LIV

OCTOBER, 1912

No. 7

## THE TRADE NEWS PUBLISHING CO. OF N. Y. Publishers of THE HUB

J. H. WRIGHT, *President.* G. A. TANNER, *Secretary and Treasurer.*  
24-26 MURRAY STREET, NEW YORK.

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AMERICAN HARNESS AND SADDLERY  
DIRECTORY (annual).....per copy, \$4.00

THE HUB is published monthly in the interest of employers and workmen connected with the manufacture of Carriages, Wagons, Sleighs, Automobiles and the Accessory trades, and also in the interest of Dealers.

Subscription price for the United States, Mexico, Cuba, Porto Rico, Guam, the Philippines, and the Hawaiian Islands, \$2.00, Canada, \$2.50, payable strictly in advance. Single copies, 25 cents. Remittances at risk of subscriber, unless by registered letter, or by draft, check, express or post-office order, payable to the order of TRADE NEWS PUBLISHING CO.

For advertising rates, apply to the Publishers. Advertisements must be acceptable in every respect. Copy for new advertisements must be received by the 25th of the preceding month, and requests to alter or discontinue advertisements must be received before the 12th day of the preceding month to insure attention in the following number. All communications must be accompanied by the full name and address of writer.

### FOREIGN REPRESENTATIVES:

FRANCE.—L. Dupont, publisher of *Le Guide des Carrossiers*, 78 Rue Boissiere, Paris. Subscription price, 15 francs, postpaid.  
GERMANY.—Gustave Miesen, Bohn a Rh. Subscription price, 12 marks, postpaid.  
ENGLAND.—Thomas Mattison, "Floriana," Hillside Avenue, Bitterne Park, Southampton. Subscription price, 12 shillings, postpaid.

Entered in the New York Post Office as Second-class Matter.

## The Convention

The Carriage Builders' National Association convention at Atlantic City is reported, and the exhibits described and illustrated in this issue.

The meeting was about equal to last year in point of numbers and exhibits. The active membership as well as unattached visiting buggy builders were largely recruited from the south. The west did not do itself so proud, in fact the section south of Mason and Dixon's line was the star delegation producer. There were also quite a number of Pennsylvania wagon makers.

\* \* \*

The meeting would have been glorious if the weather had steadily supplied all days like some of the days enjoyed, but the rain raineth most unpleasantly when there is a storm on from the southeast, and two such came to the convention.

Some of the arrangements were disjointed because of the weather, but the meeting as a meeting was full of interest and instruction for all who were seeking such qualities.

\* \* \*

There has been much comment and some discussion

as to the reason for slim attendance at the convention sessions, and plans have been put forward to change the conditions, but not any that we have heard seem to hit upon one of the very active reasons why so few wander into the meeting place. It is not likely to change until the interested but busy exhibitor and visiting builders have no assurance that they can read at their leisure the proceedings as they are reported in a "daily" the morning following.

\* \* \*

There are those who say the transactions of the association are not in themselves enough of a magnet, but we believe this point is not well taken. A cursory examination of the annual reports of the association will exhibit very valuable as well as interesting contributions comprehending the welfare of the industry. There have been occasions when the character of the addresses have been almost spectacular and brimming with nearly sensational interest, but even then the attendance was no criterion that something important was going on. We think this disposes of the criticism that lack of interest is due to lack of worth in the papers and addresses.

\* \* \*

One of the most brilliantly interesting meetings of the association was that held at the World's Fair in Chicago. There was no association exhibit that year, so interest was focussed on the meeting. To it all and several went, the addresses were garnished with a running fire of debate, and the occasion became, as we say, exceptional. We mention this to make the point that the exhibit is a very strong influence in keeping many from the meetings, and we do not think it is because the meetings per se are not worth the while.

\* \* \*

This subject, however, is a very good one to think about, and if the new president of the association should feel it his duty or pleasure to try it out, he might gather during the year a consensus of opinion from those who are thinking about the subject at all, and from such expressions find, perhaps, a way out.

We are told that other associations with an exhibit appendix have about the same experience as this dean of all the associations in the country, so if the conditions can be changed it will become a pioneer as well as remaining a veteran.

\* \* \*

The exhibit feature this year was fully up to previous displays. There were more novel as well as new features. Atlantic City has become very popular among

the exhibitors when it doesn't rain. If the entire exhibit this year had been canvas-covered, as it was last year, the damage would have been wholesale, and the disgust monumental. Fortunately more than two-thirds had a built-up roof protection and side walls.

\* \* \*

We have noticed year after year that some accessory concerns that are association members have a method all their own for soliciting trade "on the floor." The representatives circulate industriously (as they have the unchallenged right to do), but it would appear that this method is not quite fair either to competing houses that have taken exhibit space, or to the association itself. Nothing can be said about it save that it does not strike one as in line with the prime reputations of some of the concerns that are addicted to the practice. No doubt the subject has never been put to them or even looked at from this angle. It is worth thinking about, if for no other reason than to avoid the comment that never reaches the ears of the principals. It doesn't seem to be prosecuting business on a high plane—and from every point of view it is a false economy, if economy enters into it at all.

\* \* \*

The prospects for St. Louis next year ought to be alluring, as that is a point central to such a large vehicle territory. The wish is father to the thought!

## Rubber

In looking over a rubber show such as was recently held in New York, where wild and cultivated crude rubber was shown from the four corners of the earth, it seems strange to hear that all this means only 75,000 tons of crude as the world's product for one year.

But it is rather more interesting to learn that the various reclaiming processes by which old rubber is made most as good as new, manage to turn out a product of a total of 60,000 tons per year.

This old-new rubber is now getting to be large enough in volume to cut quite a figure in manufacturing processes in which rubber is a component of chief value.

The more of it that is used mechanically, the more new rubber is released for purposes for which it can only be used. This should very soon modify the crude rubber price as well as serve to make quotations more stable and less speculative than they have been.

The synthetic rubber dream has become a kind of reality. A Professor Perkin in England has put in a claim that synthetic rubber can be made as he makes it at a very low cost. His raw material is simple, inexpensive and plentiful, for instance corn starch at two cents per pound, salt, almost nothing a pound, and so on until the sum of the cost of raw material is less than five cents.

It is said a pound of rubber will cost only twelve cents when made on a liberal scale. It is claimed to be excellent for compounding, so if we add this to the reclaimed rubber mentioned, it will be one great damper on the soaring tendency of the price of the real thing.

On the seventh of September, if the program was

carried out, the Madeira-Mamore railway in Bolivia was opened for traffic, and it means a heap to rubber. It will tap the richest territory in rubber on the map, the territory drained by the Madeira river and its branches, where rubber is wonderfully plentiful, and has only needed a means to get to market at reasonable cost.

All in all, those who look to rubber for a living in our trade ought to have no fear about getting all they require at prices that will be stable, and much lower, probably. Of course, the buggy builder will get his solid tire cheaper and better, too, because the tire maker always passes the good things along!

## Wagon Production

A year or so ago there was much talk about farm wagons. There were those who said the industry was on the wane, others had facts and figures to show such was not the case.

It needed only the stimulus of the promise of big crops to show how lively the business was for "a dead one," and now that the promise has materialized, the wagons are rolling out in record numbers, and those who make them ought to be happy with more than they can do, if that is a state of happiness.

In one northwestern city ten thousand wagons have been distributed in a space of thirty days. These are annals of trade that put the wagon business on a foundation like a statue.

## Trade Revival

Accessory manufacturers very generally bear testimony to a brisk revival of trade. We hear often all the old familiar phrases about "behind orders," "can't get raw material until so and so after it is ordered," and the whole chorus is just the same as in 1906 and the early part of 1907, except that it is reported trade was never so good with much stress placed on "never."

This is a beautiful hymn of trade and we hope it will be sung over and over for a long time, as the tune never palls.

The innings of the buggy builders should come next and we hope they will have factories full to bursting with jobs ready for shipment.

## ALUMINUM PRICES FIXED

The International Aluminum Syndicate has now fixed the price of the metal for next year's delivery at 160 marks per 100 kilos (\$380 per metric ton of 2,204.62 pounds) with the usual increase for special marks. The syndicate, however, will not dispose of the entire output for 1913 at this price, there being a general view among members that production during the next 12 months will not be able to keep pace with consumption, and that still higher prices will be possible. On the other hand the syndicate has all along been very emphatic in asserting their intention of in no way handicapping the development of the aluminum consuming industries by unduly raising prices. At \$380 per ton manufacturers have quite a good margin of profit, though the price can not be considered at all excessive in view of the present levels of metals generally, and particularly of copper and tin. It is understood that makers are making arrangements to increase production should demand warrant it.—Manchester (England) Guardian.

# C. B. N. A. 1912 CONVENTION

**Meeting at Atlantic City a Success Despite Wet Weather—C. C. Hull Elected President—St. Louis Chosen for Next Year**

The association met in the Hippodrome on Young's Million Dollar Pier and was called to order by President W. H. McCurdy, of Evansville, Ind.

The president introduced the Glee Club, of Atlantic City, which rendered two selections, and received enthusiastic applause.

President McCurdy next introduced Hon. Wm. Riddle, the Mayor of Atlantic City, who welcomed the association.

The response to the Mayor's address of welcome was made by Homer McDaniel, of Cleveland.

The Glee Club then favored the convention with a song.

President McCurdy then made the following opening address. He said:

## **Opening Address of President W. H. McCurdy**

Before taking up the subject matter on which I am expected to speak, I want to express my appreciation and tender my thanks, first to our painstaking and ever-willing and affable secretary, Henry C. McLearn, who has relieved me of a great many details and under whose careful work and direction this association has thrived for so many years. Long may he live and may his remaining years be pleasant.

I want to thank the members of the executive committee for their hearty co-operation in the plan I submitted to them for increasing our membership; and it is a very pleasant duty at this time to thank the membership committee for their efficient work, without which we could not have broken all records in adding fifty-four new members to our association in one single season.

My predecessor in his annual report, spoke at some length on the good accomplished by our efficient committee on freight and classification, and I can very heartily second his statement that the crating of our product has been materially improved, and by agreement with the railroad classification committees, has been standardized throughout the country.

The committee on abuses in the carriage and accessory trades, under the able leadership of its chairman, Mr. Hunter, has pointed out many errors into which we have strayed many times, and I am confident their recommendations will be beneficial to the industry if followed.

The fire insurance committee is another useful and important committee, and their recommendations are always carefully weighed and appreciated by the manufacturers.

The committee on good roads has a wide field in which to operate, this being a subject that is receiving the most earnest consideration by both the automobile and carriage manufacturers.

The committee on the conservation of our resources has to deal with a subject that is national, and I may well say, world wide in its scope. This subject is now and has been commanding the earnest thought of our greatest statesmen in all its branches. We, as carriage manufacturers, are directly interested in the conservation of timber.

The Technical School is being wisely conducted by a Board of Trustees, and much credit is due this Board for the present development and efficiency this school has attained.

In the absence of the chairman of the executive committee, Mr. Lancaster, Theodore Luth, of the committee, read the report as follows:

## **Report of Executive Committee**

In submitting this, the fortieth annual report of the executive committee of your association in convention assembled, we wish to congratulate you on the prosperous condition of the association, with its bills all paid promptly every year, and a very comfortable balance in the bank as shown by the treasurer's report to be submitted.

In the matter of membership, which from conditions connected with our industry, we have lost some of our active members during the past few years. However, there has been a decided increase in membership this year.

All who have been members of the association for many years will testify to the benefits received from the Association,



**C. C. HULL**  
President  
Connersville, Ind.

from their intercourse with each other, the pleasure of meeting those engaged in the same calling and exchanging views with their fellow members, and at the yearly meetings where so many of those engaged in the many varied industries of which the association is composed, must bring ample remuneration to those capable of digesting such information.

No one alive to his own and the trade's interest can help being a better and wiser business man by conferring with his fellow craftsman.

Your Technical School is prosperous and doing better work each year, and we should be proud of this. In fact, many of the leading manufacturers in the automobile branch of the vehicle trade have been enabled to make as fine cars and vehicles

as are made anywhere in the world, have had the guidance of the graduates from this school as draftsmen and designers.

Their association, appreciating this, has for the last two years contributed \$1,500 each year toward the support of the school.

During the year we have made an agreement with the St. Joe Valley Traffic Association to audit the freight bills of our members who do not have a regular traffic manager in



The Queen City Forging Co., Cincinnati, Ohio  
Kelly-Springfield Tire Co., New York

their employ. Notice of this was sent all the members a few months ago. While this agreement has not been in effect long enough to report to this convention, we hope great good will result in saving expenses to the members on their freight bills. As soon as possible reports of this working will be mailed to the members for further information.

We need your aid, attention and participation in these meetings. You all have some good ideas that will be of use to your fellow members, and we ask you to take a part in the



The D. Willcox Mfg. Co., Mechanicsburg, Pa.

proceedings in the meetings and suggestions to the members of this committee, so this fortieth year's meeting may be of great value not only to us but the whole trade.

And by your efforts and aid the association starts on its path to its fiftieth anniversary with new determination to not only continue this good work, but in every way open, make the next ten years better than the many now past.

On motion, the report was received.

The president announced that the next business on this program would be the nomination of a president for the ensuing year.

Mr. W. H. Roninger nominated Mr. Charles C. Hull, and Messrs. Sayers and Sechler seconded the nomination.

Mr. McGrath moved that the nominations close. Carried.

President McCurdy announced the appointment of the following committees:

Committee on Resolutions—James F. Taylor, O. B. Bannister, R. S. McLaughlin, John D. Craft, William L. Benson.

Committee to Recommend Officers for Ensuing Year—W. E. Maxwell, W. R. Scott, A. A. Geis, George H. Schelp.

Obituary Committee—John McGrath, E. J. Hess, Homer McDaniel.

Committee on Exhibition—Frank B. Ansted, George M. Hoffman, Henry B. Jones.

Secretary McLearn stated that invitations had been received from Atlantic City, Indianapolis, San Francisco, Buffalo and Rochester, N. Y., for the next convention.

President McCurdy: I find that there is plenty of time for me to read this little paper of mine, and I believe I will give it now.

[Mr. McCurdy's paper will be found elsewhere in this issue of The Hub.]



L. C. Chase & Co., Boston, Mass.

There were congratulations and comments on Mr. McCurdy's paper by Messrs. Bannister, McGrath, McDaniels and McLearn, following which the association adjourned to meet on Wednesday morning at 10 o'clock.

### WEDNESDAY, SEPTEMBER 25

The convention was called to order by President McCurdy at 11 o'clock in the Hippodrome.

Secretary McLearn read his annual report as follows:

#### Treasurer's Annual Report

H. C. McLearn, Treasurer, Mount Vernon, N. Y.

The treasurer of the Carriage Builders' National Association of the United States submits his annual report from January 1, 1911, to the same date in 1912:

Cash in banks January 1, 1911.....	\$4,498.67
Receipts during the year from dues, exhibition and other sources.....	\$9,060.81
From the Associate Members' Association.....	1,410.00
Contribution to the Technical School.....	1,716.02
	<hr/>
	\$12,186.83
Total receipts .....	<hr/>
	\$16,685.50
General expenses during same period.....	\$8,408.66
Paid to the Trustees of the School.....	2,013.54
Cash in banks.....	6,263.30
	<hr/>
	\$16,685.50

We have received contributions amounting to \$1,716.02 for the support of the association's Technical School during the



year, of which the National Association of Automobile Manufacturers contributed \$1,000.

The Glee Club then entertained the association with a song. The president introduced Charles T. Bates, of Philadelphia, who read a paper on "The Need for a Traffic Manager," which is printed elsewhere in this issue of *The Hub*.

Mr. Straus: I move that a vote of thanks be given to Mr. Bates for his very able paper and I move that this paper be printed, together with the diagrams, and sent to every member of the association. Carried.

The report of the Committee on Good Roads, Geo. A. Brockway, of Homer, N. Y., chairman, was read by Mr. Taylor, Mr. Brockway being absent. The report is published elsewhere in this issue of *The Hub*.

The report of the trustees of the Technical School was read by Mr. McGrath, Charles J. Richter, chairman of the committee, being absent.

### Report of Trustees of the Technical School

Charles J. Richter, Chairman.

To the Board of Trustees of the Technical School:

Gentlemen—I herewith present my report of the Technical School for the year which closed October 31:

The day and evening classes opened for the season on September 25, 1911, in the school rooms in the Mechanics Institute



Eberhard Mfg. Co., Cleveland, Ohio

at 20 West 44th street, New York City, and closed on April 8, 1912.

There were ten students in the day class and forty-three in the evening class.

The day students came from the following named places: Connecticut, two students; Indiana, one; Missouri, one; New Jersey, one; New York, three; Pennsylvania, one; Canada, one. Their ages varied from seventeen years to thirty-five years, with an average age of twenty-three years. Five of these men were bodymakers, two were painters, two were blacksmiths, and one a superintendent. The attendance in the day class for the season was ninety-five per cent.

The majority of the students in the evening class claimed the Greater New York as their permanent home, although several came from nearby towns in New Jersey and others came from a distance, and secured employment during the day that they might attend our school in the evenings.

Their ages varied from sixteen years to thirty-nine years, with an average age of twenty-one and one-half years. Nine of those men were bodymakers; twelve were bodymakers' helpers; four were general woodworkers; three were blacksmiths, and there were two blacksmiths' helpers; two draftsmen; two mechanics; two foremen bodymakers; two superintendents; two clerks; one painter; one trimmer; one assistant draftsman. The attendance in the evening class for the season was eighty-four and one-half per cent.

There were six graduates, four from the day class and two from the evening class. The names of the graduates follow: Royal Herbert Swaffield, Charles Allen Woodfield, John Dobben, George Klix, Charles Novak, John Votypka.

The average age of these graduates was a little more than twenty-four years.

The correspondence department is open for business during the entire year, and the following report is of the work done from September 1, 1911, to September 1, 1912:



F. O. Pierce Company, New York

Number of students enrolled, 54; number of drawings received, 1,247; number of letters received, 1,258; number of letters sent, 1,136; number of examination papers filled out by students and mailed to the instructor, 149; number of rating cards made out by the instructor and mailed to students, 139.

It should be noted here that the men who have done all this work are employed during the day, and many of them work overtime more or less. These men will be heard from before long. Men with such energy as they have cannot be kept in the background.



C. A. Willey Company, New York

More young men ought to be fitting themselves for places of greater responsibility in our trade by availing themselves of the advantages and privileges offered in this school. Young men come here and learn to design and construct all kinds of carriages, wagons and automobile bodies, in some cases actually framing the pieces together, after having made the design and laid the working draft down on paper. We have a touring body one-half size which was made last season by one of

our day students, and a limousine body one-half size, made the year before, by two of the day students who worked together. Our school is well equipped, with fine rooms, having abundant light for both day and evening work, and we could accommodate more day students. Since our school has been located in the Mechanics Institute and the instruction in the day and evening is free, the evening students are allowed to come to the school and study in the daytime if they happen to be out of work for a day or so at the factories. This privilege



Buser-Poston Tufting Machine Co., Chillicothe, Ohio

is greatly esteemed by them. Respectfully submitted,  
ANDREW F. JOHNSON,  
Instructor-in-Chief.

On motion the report was received and placed on file.

W. H. Roninger read the report of the Committee on New Members and submitted the following list of new members:

**List of New Members from the Adjournment of the Last Convention to June 11, 1912.**

**ACTIVE**

Clifford L. Barnett, San Francisco, Cal.



Cortland Carriage Goods Co., Cortland, N. Y.

W. A. Eagwell, Bagwell & Gower Mfg. Co., Gainesville, Ga.  
Manson Campbell, Wm. Gray & Sons, Chatham, Ontario.  
John J. Delker, Park Carriage Co., Henderson, Ky.  
E. G. Flanagan, Flanagan Buggy Co., Greenville, N. C.  
S. C. Griffith, Parry Manufacturing Co., Indianapolis, Ind.  
R. S. McLaughlin, McLaughlin Carriage Co., Oshawa, Ont.  
W. F. Maxwell, Parry Manufacturing Co., Indianapolis, Ind.  
A. H. Miller, Continental Carriage Co., Cincinnati, Ohio.  
B. E. Parker, Parker Manufacturing Co., Suffolk, Va.

Harry C. Phillips, Ohio Carriage Mfg. Co., Columbus, Ohio.  
W. R. Scott, Hercules Buggy Co., Evansville, Ind.  
W. R. Tudhope, Tudhope Carriage & Automobile Co., Orilla, Ontario.

W. B. Waddill, Carolina Buggy Mfg. Co., Henderson, N. C.  
Henry A. White, High Point Buggy Co., High Point, N. C.  
N. H. Cannady, Taylor-Cannady Buggy Co., Oxford, N. C.

**ASSOCIATE**

F. Myles Brown, Louis Dusenbury & Co., New York.  
J. V. Banks, Reed & Prince Mfg. Co., Worcester, Mass.  
Wm. G. Clyde, Carnegie Steel Co., Pittsburgh, Pa.  
James Clemens, L. C. Chase & Co., Boston, Mass.  
Clifford G. Dyer, American Screw Co., Providence, R. I.  
Max Danzinger, United States Varnish Co., Cincinnati, Ohio.  
J. O. Hasson, Sherwin-Williams Co., Cleveland, Ohio.  
G. W. Huston, The Spokesman, Cincinnati, Ohio.  
G. T. Herr, Owensboro Forging Co., Owensboro, Ky.  
H. D. Hartley, The Pioneer Pole & Shaft Co., Piqua, Ohio.  
L. Harrison, Edward C. Moore & Co., Newark, N. J.  
Albert Herrlinger, Herrlinger Paper Co., Cincinnati, Ohio.  
Henry Wm. Hoole, Hickory Products Assn., Indianapolis.  
S. F. McDonald, Ashtabula Hide & Leather Co., Ashtabula, O.  
A. J. Murray, Cortland Carriage Goods Co., Cortland, N. Y.  
Leigh B. Morris, Cambria Steel Co., New York.  
A. L. Moller, Jr., Palm-Fechteler & Co., New York.



McKinnon Dash Co., Buffalo, N. Y.

Frank Medeweller, Ohio Seat Co., Cincinnati, Ohio.  
J. W. O'Bannon, O'Bannon Corporation, New York.  
E. D. Rodgers, Cambria Steel Co., Cleveland, Ohio.  
Warren B. Rood, F. S. Carr Co., Boston, Mass.  
J. Henry Smith, T. P. Howell & Co., Newark, N. J.  
Matt. L. Sullivan, O'Bannon Corporation, New York.  
J. F. Shepard, H. G. Shepard & Sons, New Haven, Conn.  
Wm. F. Vosner, Cambria Steel Co., Cincinnati, Ohio.  
A. L. Shepard, H. G. Shepard & Sons, New Haven, Conn.  
Wm. E. Diehl, Corbin Screw Corporation, Chicago, Ill.  
John T. Donahue, Cleveland Varnish Co., Cleveland, Ohio.  
W. B. Ansted, Central Manufacturing Co., Connersville, Ind.  
Geo. B. Ogan, L. C. Chase & Co., St. Louis, Mo.  
Max Jewett, The Jewett Co., Cincinnati, Ohio.  
F. B. Ansted, Indiana Lamp Co., Connersville, Ind.  
E. E. I. Martin, International Rubber Co., New York.  
Roy C. Manson, Novelty Tufting Machine Co., Detroit, Mich.  
J. C. F. Yarnell, Clarke Bros. Bolt Co., Milldale, Conn.  
H. Waldo Emery, W. R. Owen Ball-Bearing Fifth Wheel Co., Springfield, Mo.

Claude Maley, Maley & Wertz Lumber Co., Evansville, Ind.  
Geo. B. Godfrey, Atlantic City, N. J.  
T. E. Helrigle, S. Slater & Sons, Youngstown, Ohio.  
On motion the report was received and placed on file, with the recommendation that the committee be continued.

Lewis Straus, chairman, read the report of the Committee on Fire Insurance, as follows:

#### Report of the Fire Insurance Committee

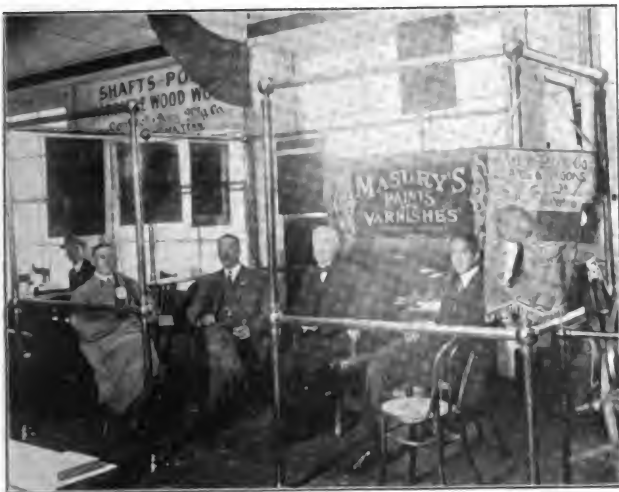
Lewis Straus, Chairman

The question of fire insurance in all its phases is a most important one to be considered by the business men and especially by the manufacturer.

The losses each year by that great demon, Fire, are enormous, wiping out great values which in many cases means ruin to the business man who had not been properly protected. Very often too little time and thought is given to the matter of fire insurance protection. It is often left to incompetent brokers and their mistakes are costly only to the insured.

In the first place the business man should do everything in his power for his own protection, the better risk he can furnish to the insurance company the less risk he will take for himself.

In the second place he should be most careful in the selection of the insurance company, their financial strength, and lastly the placing of insurance in the proper manner so that all the property is fully covered; in the matter of co-insurance the insured often carries a large part of the risk which he has no knowledge of.



J. W. Masury & Co., New York

For our own protection let us consider some of the most important agents. As we all know the great saver of wholesale destruction is the sprinkler; how often the fire is checked when but for the sprinkler it would mean great loss. Almost everyone who has had experience with the sprinkler has seen its work and can vouch for its efficiency. All insurance companies recognize its value and offer a very low rate on the sprinkler risk. It is figured that the cost of installing the sprinkler system is paid for by the saving in cost of insurance within a period of five years. Is this not worthy of our attention? Is this not a large and sure return on the expenditure, at the same time putting ourselves on a surer and truer footing?

Then there is the question of fire pails that cannot be too widely distributed. Fire doors of the right kind and patent. Fire hose that will reach all over your property and a well drilled force to handle it.

Impress on your employes the necessity of keeping your place clean of all fire hazards; cleaning up your building every day, it becomes a good habit in time. All these things help to give you a low rate of insurance on a preferred risk and at the same time add to the efficiency in your business.

We are always willing to adopt new methods in our business that will show a saving. Is there anything better or surer than this saving in fire insurance? Of the vast amount of

money lost each year by fire, a large portion can be saved and it is to our benefit to do our share to this end.

LEWIS STRAUS, Chairman.

On motion the report was accepted and placed on file.

Secretary McLear read the report of the committee to recommend officers as follows:

#### Report of Committee to Recommend Officers

Your Committee to Recommend Officers for the convention year respectfully report as follows:



The Sherwin-Williams Co., Cleveland, Ohio

Vice-presidents—John W. Fullreader, Rochester, N. Y.; W. J. Kauffmann, Miamisburg, Ohio; W. G. Norman, Griffin, Ga.; L. E. Nutt, Moline, Ill.; A. M. Parry, Indianapolis, Ind.; John L. Mason, Davenport, Iowa; Frank H. Delker, Henderson, Ky.; S. B. Cooling, Wilmington, Del.; Jos. O. Schwartz, New Orleans, La.; Thos. Clark, Amesbury, Mass.; P. R. Doherty, Flint, Mich.; P. E. Ebrenz, St. Louis, Mo.; John E. Hayford, Newton, N. H.; John H. Mount, Red Bank, N. J.; Thos. B. Tyson, Carthage, N. C.; T. J. Storey, Brockville, Ont.,



Jacob Gerhab, Philadelphia, Pa.

L. F. Wheeler, Portland, Ore.; John D. Staud, Pittsburgh, Pa.; Charles G. Boshier, Richmond, Va.; William Morris, Janesville, Wis.

For Members of the Executive Committee—W. A. Sayers, Cincinnati, Ohio; J. D. Dort, Flint, Mich.; W. H. McCurdy, Evansville, Ind.; Carl P. Schlamp, Henderson, Ky.

For Secretary and Treasurer—Henry C. McLear, Mt. Vernon, N. Y.

For Trustee of the Technical School—Franklin Murphy, Newark, N. J. W. E. MAXWELL, Chairman.

PRESIDENT McCURDAY: This report will be voted on tomorrow. The next is the election of president. We have only one nominee.

On motion the secretary cast the ballot for Charles J. Hull as president for the ensuing year.

PRESIDENT McCURDY: I will appoint Mr. Strauss to conduct the president to the front.



Richard Eccles Co., Auburn, N. Y.  
Valentine & Company, New York

CHARLES C. HULL: Mr. President, members of the Carriage Builders' National Association, I thank you exceedingly for the high honor you have conferred upon me. The life history of our association should be an interesting one to all of its members. For forty years it has lived and prospered uninterruptedly. This success is due to the constancy of its members and the efficiency of its officers. We are now closing one of the most successful years in the history of the association, as evidenced by the report of our worthy president



Automatic Axle Co., Lancaster, Pa.  
Metal Stamping Co., New York

yesterday. The dawn of the new year is radiant with promise, notwithstanding the cyclone of politics that is rampant in our land. Prices are high and it remains with the carriage builder to continue along this industrious, religious effort and he will have one of the best years in his history. It is my pleasure to pledge you my earnest endeavor to co-operation with our worthy secretary, the executive committee and the officers whom you will elect tomorrow, to the end that the coming

year for our association may be among its best, and that the individual members of our association reap the greatest reward in dollars and cents possible. I thank you. (Applause.)

Thereupon the association adjourned to meet on Thursday morning at 10 o'clock.

#### THURSDAY, SEPTEMBER 26

President McCurdy called the convention to order at 10:45 a. m. and called for the report of the Committee on the Conservation of the Resources of the Country. C. C. Hull presented the report which is in part as follows:

There are 43 National Organizations represented on the Executive Board of the National Conservation Congress of which the Carriage Builders' National Association is one. All of these organized bodies are vitally interested in conserving our nations' resources. It appears to your committee that the most effectual work can be accomplished by our association through its conservation committee co-operating with the National Conservation Congress and to that end we recommend your committee known as the Committee on "The Conservation of the Resources of the Country" be requested to attend, if possible, the convention of the National Conservation Congress to be held in Indianapolis, October 1, 2, 3 and 4, and on behalf of the Carriage Builders' National Association, render whatever service they can to the National Conservation Congress in carrying forth this great work.



Cleveland Hardware Co., Cleveland, Ohio

We, your committee, also recommend that the following message be sent to Thomas R. Shipp, executive secretary, Indianapolis, Indiana: "We, the Carriage Builders' National Association, now assembled in Atlantic City, express herewith our hearty approval of the work the National Conservation Congress is doing and the program outlined for its consideration at their fourth annual meeting to be held in Indianapolis, October 1, 2, 3 and 4. We pledge you our co-operation and support."

Respectfully submitted,

C. C. HULL, Chairman, Connersville, Ind.

Mr. Sechler moved that the report be received and the resolution therein adopted and the same be printed in the proceedings of the convention. Carried. Mr. Hull was delegated to send the message.

The president called for the report of the Committee on Freight and Classification. Theodore Luth read the report as follows:

#### Report of Freight and Classification Committee

Theo. Luth, Chairman, Cincinnati, Ohio

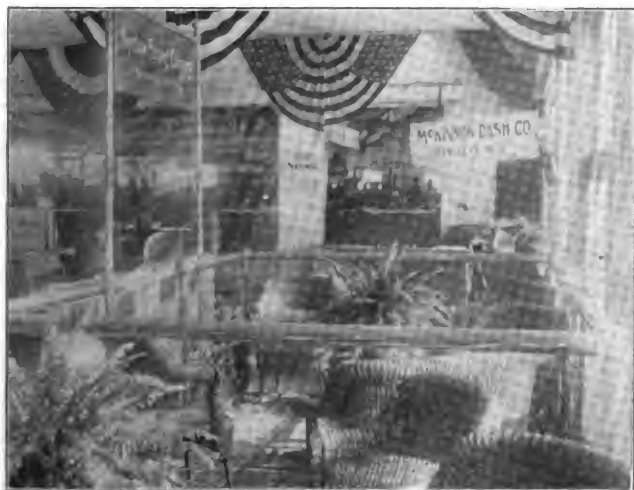
Your Committee on Freight and Classification have kept in close touch with railroad matters affecting the vehicle interests, and can report that while attempts were made on several



occasions to increase freights in the various classification territories, nothing serious was accomplished in that direction by the railroads, due to concerted action on the part of shipping interests, in which your committee took an active part.

The subject of our two sets of rates and minima to southwestern territory remain one of the important questions requiring considerable attention, and we have had the matter up with the railroad officials a number of times the past year with a view to adjust same to one uniform rate and minimum; so far, however, no agreement satisfactory to the spring vehicle and farm wagon interests, and the railroad companies, has been reached, and the present two sets of rates and minima remain in effect.

Regarding western territory, Classification No. 51, to have taken effect February 15, contained such sweeping changes and numerous advances affecting nearly all shipping interests, that the Interstate Commerce Commission ordered the effective date postponed from time to time, to enable them (Interstate Commerce Commission) to give proper hearing to shipping interests, who are united in an endeavor to prevent this Classification No. 51 from being put into effect. The probabilities are that the present Western Classification No. 50 will remain in force until January 1, 1913, and that a large number of the advances contemplated by the western railroads will be modified. In this connection we wish to advise that our



Keystone Forging Co., Northumberland, Pa.

committee is now working on a proposition to be submitted to the railroads providing for a sliding scale of minima to trans-continental territory to take the place of present fixed minimum on any size car now in effect.

Relative to Southern Classification: Last February the southern classification committee had up for consideration a proposition providing for a minimum of 12,000 pounds at fourth-class rate on spring freight wagons, which would have carried with it the privilege of mixing pleasure vehicles and freight vehicles under that rating, as against the existing classification of 8,000 pounds minimum at second class rate on shipments of spring pleasure vehicles exclusively. As only a small percentage of the spring pleasure vehicle manufacturers build heavy freight vehicles, you can easily see that this would have been detrimental to the large body of carriage manufacturers who build spring pleasure vehicles exclusively. We, therefore, registered a very strong protest against the adoption of such a classification. After considerable work on the part of our committee, during which it was necessary to use the telegraph lines freely, at a meeting of the Southern Classification committee in Toledo, at which we were directly represented, after considering our arguments the committee decided to make no change in classification affecting the vehicle interests.

In the Southern Classification, vehicle bodies without tops packed L. C. L. are at present rated three times first class.

This is an excessive rating and the chairman of our committee took the matter up for correction with the Southern Classification Committee and filed a petition to rate vehicle bodies L. C. L. same as a complete vehicle—that is, crate not exceeding 34 inches in height first class and not exceeding 54 inches one and a half first-class. A few days ago we received notice from the Southern Classification Committee that this petition was considered at a meeting of the committee, and as a result



Eureka Bending and Wheel Works, York, Pa.  
York Wagon Gear Co.'s Exhibits

a supplement to the Southern Classification No. 39 to be published at an early date, will contain a correction on vehicle bodies, rate reduced to double first class instead of three times first class as in effect at present. While this is something accomplished in that direction it is not entirely satisfactory to our committee, and the matter will, therefore, be again taken up with a view to having this rating reduced, as outlined in our original petition.

Regarding the present minimum of 11,000 pounds for a 36



Mohawk Valley Mfg. Co., Oneida, N. Y.

foot car in official classification territory, an attempt was made to get together in an endeavor to have this reduced to 10,000 pounds minimum, but so far nothing definite has been done in that direction, as the carriage manufacturers who were called upon, with but few exceptions, failed to furnish our committee with the data necessary to support a petition of this kind. This question will probably be given further consideration in the near future if the manufacturers will take sufficient interest



in the matter and furnish our committee the data necessary to be used in connection with same.

A recent ruling by the Interstate Commerce Commission relative to the application of rates provides that where through rates are published which exceed the lowest combination of rates lawfully published and filed with the Commission, the carriers are authorized to correct such through rates by reducing same to equal such lowest combination rate. This is an important decision and will be of benefit to shippers, ena-

interests an opportunity to present their arguments in opposition to the withdrawal of the stop-over privilege.

Our committee was represented at this meeting, and as a result of the arguments presented the C. F. A. lines have agreed to give further consideration to the stop-over arrangement. We are greatly in hopes that their final decision will be to continue the stop-over privilege.

Reports from both railroad and commercial interests indicate the probability of a serious car shortage this fall and winter, and we, therefore, strongly recommend that our members who are shippers and receivers of carload freight, make every effort possible to relieve the situation by promptly loading and unloading cars, and also loading cars as near their carrying capacity as possible. There seems no doubt but what the car situation will become serious and our members will do well to watch the matter closely in their own interest.

THEO. LUTH, Chairman.

President McCURDY: If there is no objection this report will be received and filed. In compliance with the recommendation of the Committee on Conservation, I will appoint as a committee to attend this meeting in Indianapolis on October 1, 2, 3 and 4, O. B. Banister, E. J. Hess, Henry Ratterman, and C. C. Hull.

The president next introduced Chas. H. Hassert, who is connected with the Kessler Wagon Works, of Philadelphia, who addressed the convention on the subject, "Credits and



Crandal, Stone & Co., Binghamton, N. Y.  
Cortland Forging Co., Cortland, N. Y.

bling them to always secure the benefit of the lowest combination of rates to any given point.

With reference to supplement No. 1, Official Classification No. 38, effective April 28, which advanced the minimum charge on less than carload shipments in Official Classification territory from 25 cents to 35 cents, the Interstate Commerce Commission ruled that this advance was not justified, and the minimum charge will, therefore, remain as 25 cents, same as heretofore.



C. Cowles & Co., New Haven, Conn.

The Central Freight Association recently decided to cancel, effective January 1, 1913, all arrangements now in effect in C. F. A. territory for stop-over privileges to finish loading or partly unload carload freight with the exception of live stock. This was a very serious proposition and resulted in a large number of protests being made to the various railroads in C. F. A. territory, and a meeting was held in Chicago, September 12, to further consider the matter and give the shipping



Dayton Malleable Iron Co., Dayton, Ohio

Collections in the Vehicle Business," which will be found elsewhere in this issue of The Hub.

A vote of thanks was tendered Mr. Hassert for his very instructive and interesting lecture.

The president called for a report from the Committee on the Abuses in the Carriage and Accessory Trades. Perrin P. Hunter, of Cincinnati, who was to make the report, was absent and Secretary McLearn read the letter from Mr. Hunter, the chairman of the committee, which is in part as follows:

#### Report of Committee on Abuses of the Carriage Trade

Your committee have come to the conclusion that the abuse in the carriage trade originates right in the carriage manufacturer's own office, and increases and decreases according to trade conditions.

There is no special remedy to be offered. There is not commingling enough of the carriage manufacturers throughout the land to bring about a reasonable change for the better, and the dealers will continue to abuse credit, at your expense, and it is your own fault if you allow them to rob you on repair bills.

The trade opinion is that the abuse arising from repair bills—fair or unfair—is diminishing, by a more firm stand taken by the carriage manufacturers. The cancellation of legitimate orders has grown less.

Since our last meeting but few complaints have been referred to this committee.

PERRIN P. HUNTER, Chairman.

President McCURDY: If there is no objection the report will be received and spread upon the minutes.

The president announced that the next order of business would be the report of the Press Committee. Mr. W. W. Wood, chairman, reported in part as follows:

#### Report of the Press Committee

Your committee is of the opinion it would be a wise act in the future if a brief story of each day's proceedings be prepared, and typewritten copies furnished the representatives of the Associated Press who will send it over the wires, and the association will thus not only secure nation-wide publicity, but more accurate reports. This your committee is endeavoring to do this year.

W. W. WOOD, Chairman.

W. W. WOOD: It occurs to me that this association might have a bureau of publicity, where we can come and get information. If you want to see a member, come to the bureau of publicity; if you wish, you can have a stenographer or typewriter, where the information of the association can be prepared and sent out daily, and in this way get wider publicity all over the United States.

The report was accepted and placed on file.



R. E. Rodriguez, New York

At this juncture two selections were rendered by the Glee Club.

Mr. LUTH: Mr. President and members, I have a resolution I would like to offer:

The Carriage Builders' National Association hereby confirm their views as expressed in the resolution adopted at the thirty-ninth annual meeting, 1911, Atlantic City, urging upon our National Congress the continuance of the Special Tariff Commission; that the tariff regulation of our country be removed as much as possible from political influence, and based upon investigation by experts specially appointed for that purpose. Carried.

The secretary read the recommendations of the Committee to Recommend Officers, as reported at the Wednesday session.

The rules were suspended and the secretary cast the vote of the association for the officers nominated.

Mr. TAYLOR: The Resolutions Committee have had an earnest session, and we have carefully considered the resolution presented by Mr. Luth. It is the only one that has been presented to the committee. It is a very important resolution, and while the committee is ready to report the resolution back to the house for its consideration, we want you to give it the same consideration that we did, because it may produce congressional action. If they know we want a thing they may give it to us. That is the reason all of you want to express

yourselves on it. So that the resolution that has been read is the only one we have to report to you, and we report it to you for your favorable and careful consideration. Carried.

Mr. TAYLOR: O. B. Bannister was elected last night at the Accessories meeting as the executive of the board representing this association for the coming two years.

The report of the Committee on Exhibition was read by Frank B. Ansted, chairman, and ordered placed on file.



Sheldon Axle Co., Wilkes-Barre, Pa.

The report of the Obituary Committee was read by John McGrath, as follows:

#### In Memoriam

During the past year the Great Reaper—Death—has garnered from among our number eight members; one honorary, three active and four associate:

Honorary—Nathan D. Speer.

Active—Charles F. Caffery, Charles Abresh, Owen Lilly.

Associate—Patrick Reilly, C. W. Clark, Wm. F. Jessup, Thos. E. Hayes.



Firestone Tire & Rubber Co., Akron, Ohio

Of these, two were called in the midst of ripe manhood, "while the shadows still were falling toward the west."

The remaining six had not only reached, but exceeded man's allotted period of three score and ten years, two of these remaining passed the age of eighty.

This association deplores their loss, and extends its most sincere sympathy to their families.

JOHN McGRATH, Chairman.

The report was adopted by a rising vote.

Secretary McLearn read a letter from Messrs. William and John Philipson, England, regretting that they were unable to accept the kind invitation of the Garriage Builders' National Association at dinner on September 26.

The president then announced that the next order of business would be the consideration of the next place of meeting; that the speeches on the subject would be limited to five minutes.

The first ballot showed the following result: Atlantic City, 36; Rochester, 28; St. Louis, 29; Indianapolis, 8; Omaha, 1.



Goodyear Rubber Co., Akron, Ohio

The president stated that under the rules the name of the city receiving the smallest vote would be dropped on the second ballot, and Omaha was dropped from the list.

A second ballot showed the following result: Atlantic City, 21; St. Louis, 27; Rochester, 25.

The president stated that Atlantic City would be dropped on the next ballot.

The third and last ballot resulted as follows: St. Louis, 38; Rochester, 25.



Selle-Akron Co., Akron, Ohio

The president announced the vote in favor of St. Louis as the next meeting place.

The convention then adjourned.

### MEETING OF ACCESSORIES TRADE ASSOCIATION

The meeting of the Accessories, of which a smoker was a feature, was convened in the Marlborough-Blenheim on

Wednesday evening. It was called to order by President E. D. Clapp. Homer McDaniel, secretary.

The proceeding opened with a discussion as to the next place of meeting. The general sentiment seemed to favor Atlantic City. On motion of Mr. Taylor the matter of choice was postponed until Thursday.

Charles Adams, of Cleveland Hardware Co., was asked to address the meeting on the subject, "Business Lessons of the Past," and said, in part:

"I find it better now to tell the truth. If times are dull I find it easier to do most anything than to tell the truth." Mr. Adams spoke at some length on the importance of the various associations, including the C. B. N. A., getting together and having a larger attendance at each meeting. He said it was a shame that important addresses were prepared and prominent speakers secured and then but a handful of men be in attendance at the sessions of the convention.

O. B. Bannister addressed the meeting on "What Should a Business Man Do Now?" His judgment was:

"Stand your ground, do not run. You can never avoid business troubles. What you can avoid is running away from them. Look for what is justice and adhere to the laws of justice without fear or favor. Study economy and practice it. We are the most extravagant people in the world. Be calm. We are among the most excitable people in the world. If



Fernald Mfg. Co., North East, Pa.

some fellow should tie a red bandanna handkerchief around his neck and cock his hat up at one side, we yell ourselves hoarse for him, and if you ask why, you are either a liar or a fool. Listen for the still small voice of common sense, and follow it fearlessly, cheerfully, consistently and calmly."

Mr. Taylor was invited to speak on the subject of the future, and responded, in part, as follows:

"You have given me a pretty hard subject. I suppose I can tell you about as much of the future as any man can. I have not prepared a speech like Mr. Bannister. I suppose if I had a wheel factory like he has I could make a speech and would come here prepared; but Mr. Bannister has a wheel factory and carries it along with him! I would not say it is in his head, but judging from his speech it is there. I believe in looking into the future; I cannot see anything that is going to pass, we all admit that. Benjamin Franklin, when he discovered electricity in the clouds, did not anticipate what the future of electricity would be. The same with the telegraph. We now have the wireless. There is that in business today which is only the beginning. I believe that corruption is greater today than it will ever be again. I believe the reforms coming on are going to lift men up and make them better. Another thing; I believe that our states are improving in their administrations—in the building of roads, of hospitals and

schools, and everything shows that the nation is moving on toward better things."

Theodore Luth addressed the meeting briefly. He said it had been a very hard subject for the C. B. N. A. to solve, how to secure a larger attendance at the meetings. He said it was not advisable to ask prominent members to address the meetings unless the members showed more interest.

### THE C. H. A. T. SHORE DINNER

The dinner was served in the dining room of the Marlborough-Blenheim. At the close of the menu Grant Wright was introduced as the toastmaster.

F. H. Gowen was introduced as the first speaker. He spoke of the growth of the C. H. A. T. since its organization twenty-two years ago at Springfield; that it was now of such size and strength to be felt in the commercial world. He expressed his satisfaction and pleasure at the presence of so many ladies at the dinner.

The toastmaster next introduced W. H. McCurdy, president of the C. B. N. A.

O. B. Bannister was called on for an address and spoke mainly about the ladies.

Charles C. Hull, the C. B. N. A. president-elect, was then introduced. He took "Womanhood" as his theme.



International Rubber Co., New York

The newly elected president of the C. H. A. T., W. J. Sohlinger, of Dayton, also addressed the guests.

### GOOD ROADS EXHIBITS

Following is a list of exhibits at the Good Roads Convention held at Atlantic City, September 30 to October 5:

The Austin-Western Co., of Chicago, had an exhibit of dump and contractors' wagons, in charge of W. T. and S. F. Beatty.

The Studebaker Corporation, of South Bend, Ind., exhibited contractors' wagons, street sweepers, carts and garbage dump wagons, in charge of Edward Chicoine, Carl Rogers, Charles Cooper and D. Bath.

The Troy (N. Y.) Wagon Works Co. were showing their dump wagon, in charge of W. E. Davis, of Troy, who expects to be located in Philadelphia to act as their representative there. The output is larger this year than in any previous year.

The Good Roads Machinery Co., of Fort Wayne, Ind., exhibited street sweepers, sprinklers, dump wagons, etc.

The Watson bottom dumping wagon made at Canastota, N. Y., was exhibited, in charge of F. N. Harrington, the Philadelphia sales agent. The plant has been enlarged and \$100,000 spent in making improvements. They made \$500,000 worth of dump wagons last year and do not make anything else. A new winding device is the latest improvement to this wagon.

A short time ago a shipment of forty wagons was made to Buenos Ayres, South America.

Charles H. Vass & Co., 509 East 18th street, New York City, were exhibiting their street sweepers and dump wagons.

The Barron & Cole Co., of New York, were showing the Milburn dump wagons, as well as other contractors' wagons.

### GOOD THINGS GIVEN AWAY

Phineas Jones & Co., of Newark, N. J., gave out a silver case and toothpick.



Eadie Vehicle & Gear Co., New York

The Ditzler Color Co. gave to their friends a serviceable pencil and case and memorandum book.

The Cortland Carriage Goods Co. handed out boxes of salt water taffy, which is an Atlantic City product.

The George R. Carter Co. were handing out small mirrors.

The Goodyear Rubber Co. gave out tickets for a balloon ride, umbrellas, cut flowers, and will send a very handsome desk clock to friends.



Monarch Carriage Goods Co., Cincinnati, Ohio

C. A. Willey & Co. presented watch fobs.

The Herbrand Co. gave out small wrenches.

The Federal Rubber Mfg. Co. gave a serviceable clothes brush.

Crandall, Stone & Co. presented a very nice drinking cup, enclosed in a leather case.

D. Wilcox Mfg. Co. gave away a wallet.

The U. S. Tire Co. gave one of the handsomest watch fobs.



The Liggett Spring & Axle Co. supplied an aluminum drinking cup.

The Fairfield Rubber Co. gave a pocket book similar to one given on another occasion.

F. O. Pierce & Co. had an excellent fountain pen for those "in the know."

Valentine & Co. had a souvenir that the express company concluded to lose in transit, so it did not materialize.

Keystone Forging Co. gave out very handsome sterling silver mounted pencils to their customers and friends.



Lowe Bros. Co., Dayton, Ohio

Sherwin-Williams Co. gave out a very serviceable leather mounted pad.

### CONVENTION NOTES

The Shortsville (N. Y.) Wheel Co. was represented by J. F. Wilson. This concern makes high grade carriage and automobile wheels. The factory has 80,000 square feet of floor space and the automobile wheel department has been enlarged.

J. L. Bowers, president of the Eureka Bending & Wheel Works, York, Pa., represented that concern. Business reported fine and



Scranton Spring & Axle Co., Scranton, Pa.

Have orders ahead amounting to \$40,000. Have doubled the export business, now working in new territory, such as France, Germany, South Africa and Russia.

The D. Wilcox Mfg. Co., of Mechanicsburg, Pa., was represented by F. E. Wilcox, L. E. Hickok, the sales manager; H. C. Brown, superintendent of the factory; S. F. Houck, R. H. Thomas, Walter Houck; the last three are directors of the company. The exhibit was gear irons and carriage hardware. Have a good export business. The prices of carriage hardware will be higher, owing to the advance in the price of raw materials.

The O'Bannon Corporation, whose selling office is at 74 Duane street, New York City, and factory at West Barrington, Rhode Island, was represented by Edward Frick, John J. Myers, Robert L. Gilman, Edward F. Maybaum and Matthew L. Sullivan. The exhibit was artificial leather for trimmings and tops for carriages and automobiles. The goods are represented to be absolutely waterproof, durable, withstanding all weather conditions and non-crackable.

The Queen City Forging Co. exhibit was in charge of T. P. Walker, superintendent of the factory. Additional machinery and other improvements have been made to the factory. Raw materials have made an advance of \$3 to \$4 a ton, or a ten per cent. raise during the past four months, which is due to the heavy demand for finished materials. Forgings will also be advanced in proportion.

The Kelly-Springfield Tire Co. was represented by F. A. Kissell, of the Philadelphia branch. The exhibit was of carriage and sectional truck tires. Factory capacity has been doubled, yet it is just as hard to fill orders.

Clarence Brooks & Co. was represented by Jacob E. Cope and C. H. Russell and had a very fine exhibit of all grades of varnish for carriage finishing, also a full line of varnish colors. The factory



Sidney Mfg. Co., Sidney, Ohio

is one of the oldest in this line, and is up-to-date in every respect.

The Union Bow Co., of Cleveland, Ohio, was showing its line of buggy and automobile bows. The factories are at Celina, Ohio, Fort Wayne, Ind., and Metropolis, Ill. At the latter place a large addition is being built, 94 x 260 feet in size, which will double the capacity. G. W. Luetkemeyer, of Cleveland, was in charge.

The Metropolis (Ill.) Bending Co. was represented by C. F. Colville, and J. H. Park, the general manager. Manufacturing gear woods, shafts and poles is the business. The factory has 59,000 square feet all on one floor, the lumber sheds are 77,460 feet. Six saw mills are in operation, stumpage owned by the company. The lumber sheds are almost a half mile long. Gear woods, made of hickory, will be 10 to 15 per cent. higher, owing to the floods, etc. The capacity of this plant is 400,000 sets of bows, 300,000 gear woods, 150,000 pair shafts, 30,000 poles. Marshall Wood will represent them in the southern states, and Vance Park in the northern states.

The Scranton (Pa.) Axle & Spring Co. was represented by O. C. Hall. The old plant of the Lackawanna Steel Co. has been rebuilt, enlarged and occupied. The output for rest of the year has already been sold.

Mossman, Yarnell & Co., Fort Wayne, Ind., jobbers of cloths, carpets and leather trimmings, were represented by H. J. Miller, sales manager for the central states; E. B. Wood, the western salesman, and L. B. Auger, salesman in the southern states.

The Western Spring & Axle Co. was represented by E. J. Hess, president; G. A. Laughlin, C. E. M. Champ, Andrew Reitz, W. F. Black, Charles Heflinger, Norman Champ and Harry Rootinger, the latter being in direct charge of the exhibit of full line of carriage and

a large addition to the plant, doubling the capacity, has been built.

The York (Pa.) Wagon Gear Co. was represented by R. A. Paules, secretary and treasurer, who reports the factory running full time. Trade in the southern states has been picking up. This concern makes wood and sheet steel turn seats, bodies and gears, also automobile bodies. Additional machinery is being installed at the plant.

George Schubert was in charge of the Schubert Bros. Gear Co., of Oneida, N. Y. A nice automobile body business, all metal, mostly of aluminum, is part of the work, also paint, trim and build tops.



wagon axles, oval top spring, single leaf springs and phosphor-bronze axles. This corporation has nine plants. E. V. Overman, the general sales manager, was not able to attend on account of sickness. An addition has been built to the Cleveland-Canton Spring Co., of Canton, Ohio.

The Standard Wheel Co., of Terre Haute, Ind., was represented by E. J. Fisher, the factory manager, and F. P. Mills, the sales manager. A specialty is heavy truck and fire engine wheels. An addition has been erected for the automobile wheel department which will increase the capacity 25 per cent.

The Sidney (Ohio) Mfg. Co. make exclusively a metal buggy seat, of 25 different styles and 75 sizes. The representative was A. A. Gerlach.

C. Cowles & Co., carriage and automobile lamps, trimmings and hardware, were represented by L. C. Cowles, M. S. Bottume, H. P. Bradley and F. M. Ruwet. The company is showing a new line of hard rubber covered grab and door handles; a new Everitt lamp in two sizes for buggies and surreys; a new electric headlight for buggies, lighted by four and five cell batteries of six volts; a new Octagon dome lamp, and Octagon pillar and door handles, and an oval dome light. Will soon celebrate their 75th anniversary and expect to build a large addition to the plant. They have bought out the Richmond (Ind.) Lamp Manufacturing Co., which plant has been closed and the machinery moved to New Haven.

The Eadie Vehicle & Gear Co. is practically a new firm. Their plant was burned at Newark, N. J., and the factory is now at Erie, Pa. The representatives were J. M. Eadie, the inventor of this gear, and J. C. Willcox, who has opened a New York City sales office at 147 West 35th street. The company makes the automatic double short turning gears for carriages and wagons. H. D. Moyer,



William Laidlaw, Jr., New York

of Syracuse, has taken hold of this gear and will show it with his line of vehicles at nearly every exposition this season. H. D. Cargill, of Cargill, Canada, is president of this company; Lawrence J. Rice, vice-president; J. M. Eadie, secretary, treasurer and general manager.

The U. S. Tire Co., of New York, has four factories: the Morgan & Wright at Detroit; the G. & J. at Indianapolis; the Hartford (Conn.) Rubber Works, and the Revere Rubber Co., of Providence, R. I. The exhibit was the solid and cushion vehicle tires made at the Hartford plant. A new addition is being built to this plant which will increase the capacity 50 per cent. At New York their fine new building at Broadway and 58th street is now occupied. O. S. Tweedy, the eastern district manager; M. C. Stokes, of New York; S. S. Poor, the Philadelphia manager; S. S. Walters, of New York; Garfield List, of the Philadelphia branch; T. B. Goodlow, of the Richmond, Va., branch, and E. H. Johansen, Washington, D. C., branch, were representatives.

The Indiana Lamp Co., of Connersville, Ind., showed electric lamps for horsedrawn vehicles, attracting much attention. The dry cells are located under the buggy seat and five cells are required to keep the lamp lighted. This is a new thing and the trade is waking to it. These lamps for buggies are the first shown at any convention, and this company is a pioneer in the line. Also on exhibit was a line of oil lamps. While at previous conventions lamps were shown as an ornamentation to a carriage, now beauty gives way to practical purposes. The company was represented by Frank B. Ansted and William F. Thoms.

The Central Mfg. Co., of Connersville, Ind., had an exhibit showing one piece metal seats. The work is made by one man, locked in a room at the factory. It is a secret process. There are no joints in the seat, the entire seat being stamped out of the metal with a die, which has before been considered an impossibility. It has not been

exhibited before. The metal seat weighs only one pound more than a wooden seat.

E. F. Rogers & Co., of Philadelphia, showed carriage and automobile trimmings and had a fine display of hand and machine made wool trimmings, electric dome light, brass, nickel and silver limousine and electric coupe and touring car trimmings, and imported interior linings. The display was in charge of E. F. Rogers, E. L. Boyle, A. L. Woodward and F. H. Hancock.

The Sheldon Axle Co. had on exhibit springs and axles and some of the special styles in use. Representatives were J. A. Young, E. J. Roth, W. J. Daniels, George M. Wall, W. C. Jacobs, O. A.



Edward Smith & Co., New York  
Rose Mfg. Co., Philadelphia, Pa.

Timberlake, H. W. Bowman, W. D. Jordan, J. B. Decker and J. F. Armstrong.

The McKinnon Dash Co., of Buffalo, N. Y., was represented by W. A. Notman. The demand is now said to be for a better class of rail dashes, while before the plainer dashes were more in use. This year the output will be largely nicked or japanned.

The Howell-Hinchman Co., of Middletown, N. Y., displayed leather for automobile and furniture trade. Represented by B. H. Strauss, who is located in New York City and travels through the south, and W. T. Hayes, the vice-president.

Crandal, Stone & Co., of Binghamton, N. Y., were represented by



Jas. H. Rhodes & Co., Chicago and New York

C. E. Titchener, Otto Heinrichsdorf, Frank E. Howland, B. B. Lynch, W. D. Jordan and N. A. Boyd.

The Cortland (N. Y.) Forging Co., making automobile forgings and carriage goods, was represented by F. L. Titchener.

C. A. Willey Co., of Long Island City, N. Y., had a full line of carriage colors, glosses, varnishes and enamels. Have a new white enamel out which is specially adapted to automobiles. Their business has been extended to foreign countries and two men are now making a tour of the world, V. Vickerson and Alexander Keddy. Mr. Vickerson has left South Africa for China and Keddy is in Russia. The American Idea or system of painting is in use in many foreign countries. A large addition has been built to the varnish factory

which will double the capacity. George McClain, Fred Surganty, Bob Bowen, Eugene Holler and Dave Anderson were the representatives.

The Carriage Woodstock Co., of Owensboro, Ky., was represented by Charles O. Mainor, manager. Had an exhibit of bodles, seats and gear woods, also automobile bodles. The factory is located where the timber is easily obtainable; fuel, and a large carriage manufacturing center within a radius of thirty miles. Metal working machinery this year has been installed. Mr. Mainor was for 19 years with the Tyson & Jones Buggy Co., of Carthage, N. C.

The Eberhard Manufacturing Co. was represented by W. B. Champney, Geo. B. Shepard, and thirteen assistants, who are familiar fig-

and showed a complete line. Since the DuPont Powder Co. acquired these works many improvements have been made, increasing the size of factory and equipment.

The Pioneer Pole & Shaft Co. has five bending and four ironing plants in this country and one bending and one ironing plant in Canada. Exhibit in charge of A. R. Friedman, president; H. D. Hartley, secretary and treasurer; William M. Hamilton, manager of the bending plants; Edward C. Sendelbach, general sales manager. The company showed its 20th century shaft, ironed, with its new brace feature, extending in front of the mortise, which makes a strong construction.

George R. Carter & Co. showed a line of leather specialties for the carriage and automobile. George R. Carter and Curtis Withrow in attendance.

The Fairfield (Conn.) Rubber Co.'s exhibit was in charge of E. W. Harral, A. C. Wheeler and George W. Husted, displaying a line of rubber goods and imitation leather. Have been very busy this year and have a large number of orders booked ahead.

R. E. Rodriguez, of 56 Warren street, New York, showed paint and varnish brushes. He also had a composition pumice stone for the carriage trade. He also represents the Ditzler Color Co, making coach and automobile colors. He was assisted by P. M. Ditzler and M. F. W. Stone.

The Federal Rubber Co. was represented by M. C. Center, of Cincinnati; H. D. Benner, who is a new man in charge of the Philadelphia branch, and Charles Measure, who has charge of the solid tire department. Buildings 75 x 200 feet in size, which will increase capacity of the plant 30 per cent. are going up.

The National Malleable Castings Co., whose specialty is the Sarven wheel castings, was represented by J. A. Slater.

F. O. Pierce & Co., of New York City, were showing their automobile and coach colors and varnishes. A new color book has been



Backstay Machine & Leather Co., Union City, Ind.

ures in these conventions. This year automobile hardware and irons for the motor truck business were features of the display also.

The Rose Mfg. Co., of Philadelphia, showed the "Neverout" lamps, as well as patent driving lamps, guaranteed to stay lighted, made by a new process which eliminates solder, new styles of electric driving lamps to be used in connection with dry cell storage batteries, also on display. The exhibit was in charge of H. C. Rosenbluth. George K. Voight, who looks after the eastern sales, was at the convention.

The Liggett Spring & Axle Co. was represented by J. H. Neuhart. A line of carriage and wagon springs and axles, automobile springs and truck axles was exhibited, also a new oval leaf spring which is making a decided hit.



Curt Rollheim, New York

The Cleveland (Ohio) Hardware Co. employs 2,000 men at its plant. A new five story, fireproof, brick and steel structure for the manufacturing department is going up. It will largely increase capacity. The company was represented by C. E. Adams, W. T. Gibbons, A. O. S. Allan, O. T. Sanderson, J. R. Swan and P. W. Andrus.

The Fabrikoid Department of the E. I. DuPont de Nemours Powder Co., with factory at Newburgh, N. Y., was represented by J. K. Rogers, the sales manager, assisted by Messrs. Prince, Silkman and Stark. The exhibit was artificial leather, adapted to the upholstering of all kinds of vehicles, for either hot or cold climates. This department also specializes on coated and mackintosh top fabrics



Cateley & Ettling, Cortland, N. Y.

issued, which will be mailed on request. Have an improved product of red light English vermillion shade, also a new departure in very dark blues, which can be obtained in color varnish or ground in japan. Making great improvements in the solid black rubbing varnish as to covering qualities and extreme blackness. In color varnishes are putting on the market a new high grade product known as auto colored rubbings, especially adapted to high grade carriage and automobile painting. Factory has been enlarged to double size and output will be greater. This firm was represented by S. T. Cline-man, the New York City salesman; H. A. Fitch, the sales manager; A. H. Schmidt, treasurer.

The Cortland (N. Y.) Carriage Goods Co. was represented by A. J. Murray, R. L. Brewer, Jesse Jennison, sales manager; A. W. Curtis, A. E. Ronlinger and Marshall C. Wood. Make full line of carriage top hardware, body loops, Balley hangers (the latter a new line), etc. Mr. Wood is the new southern salesman at Raleigh, N. C. Company is making a great carload sales proposition, which means savings in freight, no goods damaged, no cartage, no lost shipments. The factory has been enlarged and the facilities improved.

C. C. Bradley & Son's patent shaft couplers are selling for 70 per cent. less than several years ago owing to larger output. Bradley carriage couplers and power hammers are standard. C. C. Bradley, Jr., Joseph Wallenstein, of Cincinnati (a new salesman in the west), and E. B. Lynch, of Baltimore (representing them in the south), in attendance.

The Back Stay Machine & Leather Co. showed leather specialties. R. C. Schimmel, president of the company, was on hand.

Valentine & Co., in their exhibit had a wheel showing the effect of soap and water on varnishes other than Vanadium. The new Vanadiums were the attractive features. A large concrete and brick

storage building has been erected, to hold 150,000 gallons of oil. Representatives were J. L. Flynn, A. R. Bittong, J. H. Wilson, W. J. Harding, A. L. Phillips, the treasurer; A. A. Morrow, vice-president, and N. T. Pulsifer, president.

Richard Eccles Co., of Auburn, N. Y., showed vehicle forgings, ball bearing couplings, etc. W. W. Eccles, secretary and treasurer, was in charge.

L. C. Chase & Co. have been in business 75 years, making artificial leather, rubbers and mohair top fabrics, robes, blankets, etc. Have eleven mills in the New England states. Representatives at the convention, James Clemens, William Walden, George B. Ogden and R. R. Bishop.

John W. Masury & Son, of 44 Jay street, Brooklyn, were showing their system for painting and varnishing wood and metal automobile bodies. Their trade extends all over the world. Will later on build an entire new factory. Were represented by T. J. Ronan and W. F. Egan.

The Brown Bros. Hardware Co., of Gainesville, Fla., has its own hickory timber and saw mills, cutting up dimension stock. Sales are to builders of shafts, rims, poles, etc.

The Campbell & Dann Mfg. Co. is making a full line of poles, shafts, bows, rims and seat bendings. Their exhibit was in charge of J. L. Dann, secretary and manager.

The Keystone Forging Co., of Northumberland, Pa., is manufacturing a full line of gear sets, loops, body hangers, clips, stay braces, etc. The Dixie gear sets and Keystone body hangers are being featured as new lines. Erecting a new two story building, 60 x 100 feet in size and additional machinery, a new japanning plant and machinery for the manufacture of clips. Exhibit in charge of T. O. Van Alen, secretary and treasurer; J. D. Weeks, sales manager, and Isaac Cornwell, general manager.



Gresham Mfg. Co., Griffin, Ga.

The Mifflinburg (Pa.) Body & Gear Co. was represented by H. W. Orwig, W. R. Orwig and Omar S. Buck. Bodies and complete buggies, in curly poplar, natural wood finish, comprised the exhibit.

The Herbrand Co., of Fremont, Ohio, was represented by C. F. Thompson, showing carriage hardware and wrenches. Expect to build a two story addition, 45 x 75 feet in size.

James H. Rhodes & Co., of Chicago and New York, exhibited sponges, pumice stone, brazier bricks, etc., in charge of John D. King, vice president.

The Enterprise Brass & Plating Co., of Cincinnati, O., represented by Mr. Apfel. This concern has purchased the carriage rail department of Joseph N. Smith & Co., of Detroit, including tools, dies, etc. The plant has been equipped with all new machinery and the two factories have been combined.

The Monarch Carriage Goods Co. was represented by C. J. Rennekamp, in place of C. M. Weiglein, who was sick.

The International Rubber Co., of 320 Broadway, New York, was represented by E. E. I. Martin, from the factory at West Barrington, R. I., and H. H. Foster, the new western salesman, formerly with the Standard Oil Cloth Co. The company announces that it is now selling rubber carriage cloth direct to the trade.

The W. R. Owen Fifth Wheel Co., of Springfield, Ohio, was represented by R. W. Emery, secretary and treasurer, showing ball bearing fifth wheel, 7, 10 and 12 inch.

The Firestone Tire & Rubber Co. was represented by A. G. Partidge, assistant sales manager; Wylie West, manager of the Atlanta branch; R. W. Walton, manager of the Philadelphia branch; G. A. Talbot, H. W. McFadden, F. M. Salley, C. M. Folger, A. P. Cleaveland and C. H. Sorrick. This is the largest plant in the world devoted exclusively to the manufacture of tires. An entire new plant has been built to increase the output of the solid tire business.

The Sherwin-Williams Co., of Cleveland, Ohio, exhibited its line of paints, varnishes and colors, the finishes suitable for metal bodies and seats and a standard line of materials for wood seats; baking enamels and japans for accessory parts. The factory to manufacture the dry colors has been added to, the corroding plant to manufacture lead has been enlarged, and additions are being made to the linseed oil mill. Represented by A. D. Atherton, O. E. Tichenor, James Sterling, D. J. Moore, J. O. Hasson and C. W. Wallace.

The Goodyear Rubber Co., of Akron, Ohio, had a novel feature—a large balloon, which was made specially for the carriage show, and a balloon expert was in charge, R. H. Upson, who was one of the



C. C. Bradley & Co., Syracuse, N. Y.

pilots to start in the Kansas City race. The first ascension was made by J. B. Moss, the Goodyear district manager, of New York City. The company procured 300 umbrellas and gave them out for the wet weather. E. J. Samuels, the publicity man, was much in evidence. G. M. Stadelman, secretary of the company, arrived in time to meet his friends in the carriage trade. The booth was decorated in the Colonial style, with green and white decoration. The company had twenty representatives at the convention, all big men in the concern. The company is erecting two large buildings in order to increase the automobile tire capacity from 5,000 tires a day to 7,500. The carriage tire factory is constantly being enlarged and this department will in the future turn out from 1,500,000 to 3,000,000 tires a year.



Carriage Woodstock Co., Owensboro, Ky.

The Dayton (O.) Malleable Iron Co. was represented by H. E. Morrill and C. P. Osborn and had on exhibition their line of fifth wheels, lamps, steps, screw clamps, wrenches, carriage trimmings, lamp and seat irons, etc. Have a new screw clamp out and now modifying the fifth wheel; also bringing out a new line of automobile specialties, such as tire irons, valve lifters, spring spreaders, spark plug wrenches, muffler and horn cut-outs, etc.

The Diamond Rubber Co., of Akron, Ohio, has built up such a large volume of business through the quality of its goods that it is now erecting a building larger than any of their old structures, which will give 280,000 square feet of floor space and will increase the

capacity of the plant 100 per cent. There are 5,500 men employed in the Diamond works alone. Represented by C. W. Simpson, of Cincinnati; Edward Anderson, of Chicago; T. B. Lyman, of Akron; H. B. Loeb, of New York, and Clyde Thompson, the publicity man, of Akron.

The Gresham Mfg. Co., of Griffin, Ga., was represented by N. J. Baxter and had exhibited a general line of bodies and seats in white. Have a new body out, which has a bent, square corner. On account of increased business have built an addition to plant which cost \$40,000, with \$10,000 of machinery. These improvements have increased capacity 30 per cent.

The Buser-Poston Tufting Machine Co. represented by B. C. Poston, had on exhibit a machine for making upholstery goods. This machine at the convention turned out a cushion, 22 inch body, with 25 buttons, in ten minutes. Mr. Poston has gotten out new metal button holders. Have put in modern machinery at the factory for making mould boards. This machine will save any one using it 50 per cent. of time and money.

The Peters & Herron Dash Co. was represented by Charles M. Peters, president, M. K. McGaughy and J. D. Kilmer, treasurer and sales manager.

Jacob Gerhab, of Philadelphia, represented by William Gerhab, Charles P. Ising, and J. R. Dalrymple. Mr. Gerhab had on exhibit cloths, carpets, the Phillips-Lafitte Co., of Philadelphia, welding plates and the Rub-on Varnish Co., of Buffalo. The latter concern is making a concentrated lining dye for dyeing linings, old faded tops and also the Rub-r-tite for gum surfacing mohair, pantasote and rubber tops; also getting out Col-r-ol, a leather dye to renew upholstery.

The Akron-Selle Co., of Akron, O., making wagon gears, has installed at the factory a new welding plant to weld bands and rings. Representative, M. O. Howard.

The Standard Varnish Works was represented by John Bratsing, of Philadelphia, and Arthur Davis, of Chicago.

Edward Smith & Co., with factory at Long Island City, make fine varnishes, colors, etc., for the carriage and automobile trade. This old varnish house was established in 1877. Mr. Niederhoed, of Niederhoed & Bailey, is now on a trip around the world in their interest. Represented at the convention by James F. McBride, the sales manager, and John W. Welsh.

P. Rielly & Son, leather tanners of Newark, report that as hides have shown a constantly upward tendency, having advanced from 18 to 23 cents a pound during the past three months, leather will

Hoopes Bros. & Darlington manufacture carriage, wagon and automobile wheels and it is one of the oldest plants in the east. During the last few years has taken up the manufacture of automobile wheels. Represented by E. S. Darlington and H. B. Coleman.

The Fernald Mfg. Co. is making the quick shifters, anti-rattlers, third seats, wagon jacks, whip sockets, oil washers, brake and coil springs. R. J. Matthews was the representative.

George Tiel & Co. are making a special effort to introduce limousine trimmings, together with their line of fancy cloths, laces and carpets to match. They were represented by S. E. Wright and William E. Swanton.

The Mohawk Valley Mfg. Co. was represented by O. G. Snyder and Al. Schneider, two brothers by the way, but who spell their names differently. Carriage specialties are the goods made. Have bought a building at Oneida, N. Y., and have fitted it up to make malleable iron. The factory at Utica will be moved to that place. Specialty is made of spark plugs, mufflers, shaft couplings, chafe



Geo. R. Carter Co., Connersville, Ind.



Indiana Lamp Co., Connersville, Ind.  
Central Mfg. Co., Connersville, Ind.

also advance proportionately. They were represented by W. G. Peters.

Cately & Ettling, making carriage hardware, were represented by O. C. Ettling and Mrs. A. M. Ettling.

Lowe Bros. Co., making undercoatings, colors and color varnishes, were represented by R. S. Gabell, C. W. French and W. J. Sohlinger. There is under construction a five story, concrete addition, 75 x 400 feet in size, which will increase the capacity 25 per cent.

The Never Fail Carriage Window was on exhibition, represented by Curt Rollheim.

The Automatic Axle Co., of Lancaster, Pa., exhibited automatic ball bearing and cone bearing axles. Represented by A. H. Worrest, E. W. Worrest and Otto Bohn.

The Illinois Iron and Holt Co. says that next year will take up some new lines of manufacture. Have absorbed the Star Mfg. Co. across the river in the same town. W. C. Martin was the representative.

irons, etc. The new plant will be in operation November 1. The present proprietors have also bought out the interest of R. H. Thomas.

Peter Woll & Sons Mfg. Co. had on exhibit curled hair and upholstery supplies. The manufacture of curled hair by this firm all goes through the boiling process, which kills germs. This exhibit was in charge of R. Kroeltzsch, who has been with this firm for thirty years, and is well known among the trade.

### NEW REX CATALOG AN UNUSUAL ONE

The Rex Buggy Company, of Connersville, Ind., are sending out an attractive and comprehensive catalog of 128 pages, 8x10 inches in size with double cover, printed throughout in two colors. The text and halftone illustrate in detail many features of the "Rex" line, among which is the electric lighting system for vehicles of all kinds, flexible reach gears, single piece steel seats, steel bodies, etc. It has been the practice among automobile manufacturers to use idealistic landscape views in illustrating the many uses to which their product is suited. The Rex Buggy Company has embodied in a way this plan, but has gone the automobile manufacturers one better and used actual Indiana scenes as a basis for the art work. The "Hanging Rock" at Madison, Ind., serves as a basis for the cover design complete, which is printed in three colors on an antique blue stock. The inside cover is printed from a scene on a favorite drive near Vevay, Ind. The page heading which runs throughout the book in two colors, is an adaptation of what is known as "Lovers' Lane," being the road from Madison to Hanover, Ind. Of course, none of these are drawn out in detail but each of the scenes possess enough realism to be easily recognizable by any one familiar with these scenic beauty spots.

Taken as a whole, the new Rex catalog is a thoroughly artistic production, possessing above all a selling force of unusual character. A copy may be obtained by addressing the Rex Buggy Company, Connersville, Ind.



# MANUFACTURING ECONOMY AND EFFICIENCY

By W. H. McCurdy, President Carriage Builders' National Association

Business success has many meanings, but today I only wish to speak of one and that is, success from the standpoint of profit to our stockholders and ourselves. Naturally, we are making a profit in our plants or we could not stay in business, but the question we are facing today is: "Are we doing business in the way that best conserves our plant and resources?" Have not most of us in the past and are not some



Standard Wheel Co., Terre Haute, Ind.

of us at the present time, running our plants on a sort of hit-or-miss plan instead of on a systematic and well matured basis?

A great many of us had small beginnings. The 20 by 50 shed has expanded into a factory covering acres. Under these circumstances the majority of our factories are not laid out ideally, nor are they capable of being so rearranged as to accomplish the very best results. Consequently, the first question to consider in planning for the future is: "What must I do to make my plant economically efficient?"

Ruskin has said that economy no more means saving than it does spending money; it means the administration of a house, its stewardship, both saving and spending money, time and energy to the best advantage. The cleanest definition of economy, public or private, means the wise management of labor, and it means this in three senses—apply your labor rationally, preserve it, produce carefully and use its products seasonably.

The successful manufacturer must be many sided. He must have the ability to plan as well as execute. He must be as closely in touch with the sales end as with the manufacturing processes. He must be, if I may use the expression, a "practical visionary."

Heretofore we have attempted to solve the problem of adding to our profits by increasing our sales, but competition forces us to realize that increased sales do not necessarily add to our profits in proportion to the increased expense. I believe it is time we realize that we are at a stage in this country which Germany reached several years ago. The German manufacturer's motto is: "How much can we save?" while ours apparently has been: "How much can we do?"

Efficient management provides or should provide several means of getting information. I would say, first, a careful

analysis to determine before the work of readjusting is undertaken, exactly what present conditions really are.

Second, recommendations suggesting the best way to obtain greater efficiency and economy.

Third, the employment of the best machines, giving the best possible facilities under the revised plan for bettering conditions in the factory.

Fourth, administration, organization and co-operation.

Fifth, accurate records of the cost in detail of the finished product.

## Analysis

The proper analysis of a plant requires the services of one drilled to see in detail all that exists in a factory by passing through it. We call him an "efficiency engineer." We should engage such an engineer to analyze our plant and he should give us definite statistics in typewritten form, showing what we have to deal with.

## Recommendations

The next move by the engineer should be in the form of recommendations and these recommendations should (provided the building dealt with is not of the most desirable type) embrace two plans. The first to work out the highest efficiency and greatest economy in the old building; the second should show the additional efficiency and economy obtainable by abandoning the old building and erecting an entirely new plant. This comparison will be of great value to the owners of the plant in determining whether they should abandon the old plant or make the rearrangement to fit it, the old one.

## Machines

We are now at a point where we are to deal with a problem that requires heroic treatment if we would reach the goal of greatest efficiency and maximum economy. We have machines that we regard as we do a family horse. The horse grows old and we turn him out on pasture to finish up his few remaining



O'Bannon Corporation, New York

years in peace. To keep the old machine for the good it has done, is the first step toward bankruptcy. I will say that experience has taught that the old machine should be put in the scrap pile at any cost. You must either put it there or it will put you there, and replace it by the machine known to be the fastest in use where quality is not sacrificed.



### Organization

I often wonder why men organize a company and incorporate under the laws of the state in which they live, to do business, and then in business each one apparently goes his own way. There is nothing that will add more strength to an organization than cordial co-operation. It is a well known fact that every man has his limitation, and it is just as well to know that an organization of men all working to one end practically has no limitations. They can create new units of thought, but the central control rests with the organization. I have never known a



Western Spring & Axle Co., Cincinnati, Ohio

business to fail where the organization all worked in harmony to one common end. There may and should be a dominant head. However, in the organization each man's opinion must be carefully considered and all the good in it adopted. Every man must have individual credit for his personal thoughts and the personal work he accomplishes. This leaves the soil completely fertilized, as it were, for a new crop of thoughts.

A great many advantages accrue to an organization of men that are all in touch with each other and in full sympathy with the success of the business, that cannot obtain where cordial organization does not exist. The buyer is in close touch with the superintendent; the superintendent is in close touch with all the foremen; the foremen are in close touch with all of their men, and all are in close touch with the general manager, and he with the dominant head.

### Costs

Accurate costs either precede or follow organization, and I am not clear as to which should have precedence. I can state, however, without fear of contradiction, that a business large or small is walking on dangerous ground when they cannot determine exactly the cost of their product at the end of each week or month. Every manufacturer should absolutely know what his goods are costing him. Guessing should not be tolerated in these days of modern accounting. Accurate records for comparison should be kept from year to year. It is the best barometer you can have, the strongest schoolmaster when you are not right, and the greatest solace when things look doubtful to you.

We have now the analysis, the recommendations, the organization and costs.

Industrial administration points directly to the necessity of careful initial work previous to any rearrangement scheme, and I believe you will agree that the efficiency of any industrial plant is governed to a large extent by the effectiveness of the work done prior to the actual commencement of operation.

Few of us can afford to shut down our plants while changes are being made, whether we engage the services of an expert or an efficient engineer to actually plan and oversee the changes, or whether we do the work ourselves. Then, too,

any change in the routing of work or handling of operatives or the system of inspection or the handling of the material, must be planned so as to interfere in the least measure with the work on hand. The readjustment process can usually be worked out while the plant is running. This point must be settled by the parties interested.

The first necessity is to visualize one's entire situation and as before stated, put the scheme down on paper in concrete form. I would recommend that one of the essentials in the beginning is to provide for economical ways of receiving, storing and issuing material. The rearrangement of equipment must be worked out in connection with the sequence of manufacturing operations. Then the routing and the handling of orders and the adoption of, and planning for a production department becomes comparatively simple.

I believe it is a fact that 90 per cent. of the carriage manufacturers can by an orderly rearrangement of their equipment, cut down the course of travel of materials and orders at least one-half. The savings, as you can readily see, are not inconsiderable under such circumstances.

Let us assume that the layout of machines, etc., is such that each manufacturing operation follows the preceding one, and that accordingly the line of travel is not broken and no extra handling is necessary between the entering of the raw material and the finished storeroom. Naturally, the question then arises, "what next?"

How many of us have really studied and determined the capacity of our machines; have found out that this machine can be speeded up or that another should use high speed tool steel instead of the ordinary carbon steel with the result of not only turning out a better job, but of increasing the machine output many times? How many of us have established standard practices in our plants? By this I mean determining by a series of experiments just what is the best and quickest way of handling every operation that enters into a finished article.

How many of us have studied and standardized the proper duties of our superintendent and foremen in order to insure the best routine? Honestly, have we as executives much more than a hazy idea of just what constitutes a fair day's work



Pioneer Pole & Shaft Co., Piqua, Ohio

at a just wage? Have we fixed a standard of quality and systematized our inspection service, not only of the raw material, but of the various manufacturing operations to make sure of our trade getting in quality all that they pay for?

If we wish to grow in the right direction we must face these vital questions. I believe firmly that when these matters are settled from a scientific management standpoint, the question of ultimate profit will take care of itself. The question of profits, however, can never be settled until we have exhausted every means to bring our plans up to the efficient

point demanded by the conditions which the manufacturer faces.

In other words, we should absolutely know whether or not our business is being conducted at a minimum cost. Up to comparatively a short time ago scientific management was considered by most of us as merely a catch phrase for some particular fad that a specialist had devised to fit particular conditions; today we know that the expression means the highest imaginable development of a business through an exact knowledge and control of the minute details incident to the business.

We consider the buying of material, for example, an apparently simple matter, do we not? We use in our industry a tremendously varied line of raw materials—wool, linen, iron, steel, wood, and so on. How many of us have conducted tests to determine what grades are best for the purpose intended? Have we been keen to search out new sources of supply or to avail ourselves of expert information on grades or quality? Economy is by no means a matter of price. We don't find it economy to buy \$10 suits or \$2 shoes and it certainly is not economy to buy the lowest priced lumber or leather, as many of us have found that the per cent. of material we throw away as useless, the time and labor required to pick out the sheep from the goats is so great that our supposed economy proves to be an extravagance.

Let me just touch for a moment upon the question of costs. I understand that statistics show that not over three per cent. of the manufacturers in the United States actually know the real costs of their product and I imagine that we carriage manufacturers are pretty generally in the ninety-seven per cent. category. Competition is so keen, the pressure for lower prices from the buyer is so constant, we are more than apt to dodge the matter of costs or at least delude ourselves by saying, "if the other fellow can sell at that price I can, for my plant is just as efficient as his." Under such a belief we "guess" we will make a profit because we "think" the other factory figured its costs scientifically and accurately.

Low prices are made many times because of a lack of definite cost knowledge. When we are forced to accept a contract at a low price it is certainly the more necessary for us to know exactly where we stand. Accurate cost information is equally illuminating in order for us to determine whether the various departments of our business are being run economically and efficiently. Another feature and a valuable one, too, is the information given us on the various manufacturing operations with the resultant opportunity of being able to correct methods and install those that insure economy.

We should be able to correct these things at once instead of letting them run until they become a fixed quantity. All such savings result in added profits. I realize that there is bound to be more or less red tape connected with the securing of correct costs, but this need not necessarily become a bugbear. I know that at times such work seems unnecessarily burdensome, but not if we consider the figures obtained as a barometer of manufacturing conditions. With us as with every other manufacturing line, eternal vigilance is the price of success.

It is a manifest impossibility for me to more than partially outline some of the ways in which economies are possible. For example, are our plants properly lighted? This should be a matter of more than passing consideration. I take it for granted that all of us do our repair work when manufacturing conditions are at their lowest ebb. The time of the year when the power plant is being overhauled is a good time for us to make an investigation into the best method of lighting. I heard of an incident a short time ago of tests made with white paint on interior walls which increased the light nineteen per cent. on bright days and over thirty-six per cent. on gloomy days. Bright, cheerful surroundings have a greater effect on our output than most of us realize.

I am not going to attempt to go into the savings possible in our bookkeeping, but I just want to add a word: that is,

that most of us get but little real information out of our bookkeeping methods. Our monthly balance sheet is, aside from a proof of the bookkeeping operations, of but little real value to the management.

I believe that information regarding the cost of running different departments, costs on the different lines we manufacture and similar information is of equal, if not greater value than merely bookkeeping figures, and we should pay more attention to the figures put before us which cover essential conditions. We should not think of costs in a lump sum as expenses in our balance sheet; at the same time we must not become so absorbed in cost accounting that we will spend more money than the information is worth. A careful cost accounting and a little common sense make a mighty effective combination.

### WHAT IS FULLY EQUIPPED?

Let us begin at the front of the car and go through it. Let us take the radiator first. Surely, you say, this is complete and requires no equipment to complete it. Wait a minute. What about a "mascot"? Some people don't consider their cars complete without a plush monkey or a stuffed rag policeman stuck idiotically on the top of the radiator, and others,



Federal Rubber Mfg. Co., Milwaukee, Wis.

again, with greater taste, adorn the radiator cap with artistic emblems in brass or nickel, or the badge of the club to which they have given their allegiance. But it is in regard to its wants in garage that the radiator calls for most equipment. Thus, for wintry weather the motorist can have a heating lamp to keep the water within it warm in a cold house, a woolen cover to keep the heat in, and anti-freezing mixtures to render such fittings needless. Water softeners or incrustation-preventing chemicals will be found useful or necessary in limestone districts, and repair pastes and powders are provided should leaks develop.

So much for the radiator. When we come to the engine a host of wants or desirable things present themselves, including a variety in fittings which are normally included in the car. The motorist has a wide selection in the things, as well as in batteries, spark plugs, commutators or silencers, one or other of which may be found to give better results than that which he already has, and the perfection and completeness of his equipment improved. Lubrication may be faulty, and, here again, a choice of systems is at command, while the severely critical may consider equipment incomplete without the fitting of a compression indicator with which the working of each cylinder can be tested at any moment. A sight feed on the dashboard as a check on lubrication may be desirable, if not already installed, and there are such things as plug protectors and improved wire connections, as well as fibre housings for the wires to be added before the fastidious can consider the equipment of his engine complete. And now we have the safety

starting handle attracting attention, to say nothing of the matter of engine starters, and with a score of devices and half a dozen systems to choose from, the up-to-date motorist can add quite a lot to his car, and spend quite a tidy sum in this direction before he can consider his vehicle "fully equipped." And then in the garage there are a lot of things we need or may employ for the welfare of the engine.

Some men to whom dirt is an abomination, and to whom cleanliness is next to godliness, keep engine paint on hand, and so enable their engines to retain their new appearance and unwelcome dirt to be "spotted" and removed at once. Then we have the numerous brands of greases, oils, etc., for engine's needs, and carbon removers for its treatment when internally dirty. Packings and jointing preparations to remedy leakage in oil or water connections, and such instruments as voltmeters, ammeters, valve spring lifters, and magnetic "fingers" for picking up tools and small things dropped into crankcase or undershield, items of equipment which may equally find a place in the tool equipment on the car in the tool cupboard of the garage, writes H. Sturmey, in *The Motor*.

The gasoline tank, simple as it seems, may be made the central point of more in the way of equipment than might at first sight appear possible. It may be fond of choking the supply pipe with dirt from the fuel, and may be fitted with one or other of many forms of strainer very usefully, and we can, if we wish, equip it with devices which, upon a dial or scale, carried on the dashboard, will show us not only the quantity of fuel our tank contains, but also the mileage rate at which consumption is going on, and we can equip our tool boxes with fillers to avoid waste, and can openers to render our task easy.

In clutches there is variety, if to render our equipment perfect we may even change the one fitted to the car we have bought for something different, or we may prove its efficiency by fitting cork inserts, or by lining it with a different material. We may fit a clutch stop to render gear changing easier, and we may keep on hand, in garage or tool box, a supply of castor oil for the treatment of the leather with which the clutch may be lined.

We cannot add very much to our equipment where the gearbox is concerned, but even here we may install an air pump worked off one of the gear wheels, or we may fit the box with an automatic speed control device which will put the clutch out of action and apply the brakes when the legal, or any other limit has been attained, and, of course, we may often vary our choice of grease with advantage to the gear and to the efficiency of transmissions. Covers may be required to the universal joints of the cardan shaft, and to the steering knuckles and connections before we can consider the equipment of a car complete, while we may also, if we choose, have a self-centering or "automatic steering" device fitted to the front axle, which will always bring our steering wheels back to "straight ahead" as soon as we take pressure off the wheel.

In regard to the springs, shock absorbers have been before the public for a long time, and although not included in the list of most makers' "complete equipment," many do not consider a car complete without them, while we have had supplementary springs which undoubtedly add to the comfort of the car offered in great variety, and we can also improve the working of our springs by the fitting of special spring bolts and leaf lubricators, and our garage cupboard will be more complete in its equipment if it contain a supply of graphite and special lubricants for the spring leaves.

Wheels in great variety are now offered us, and although the standard equipment of the car is still the wooden artillery wheel, many a motorist today does not consider his equipment complete without one or other of the numerous detachable rims or detachable wheels, which the trade are now able to offer for his selection, and the latter may be built with tubular spokes or wire ones, the latter on the suspension principle. Then even if these are not employed, the "spare" or emergency wheel—which is not a wheel at all, but only a rim and tire—may be needed to complete our idea of full equipment, and in connec-

tion with the same we shall require a means of carrying the "spare," and where the ordinary fixed wheels are retained a cramp or wheel-drawer will no doubt be a piece of useful garage equipment.

Although all cars are fitted "complete" with tires when they are sent out we can often improve on the kind supplied. But a simple tire alone is a far from complete idea if one may judge by the great variety of additional fittings offered us which may be used, it is understood, to our advantage in connection with it. Thus, we have choice of a wide selection in covers to go on outside, variously for tire protection, to take the wear and for the prevention of skidding on greasy roads. We have non-skid attachments which are not covers and tire protectors, and we also have covers for the encasement of the "spare." We may help to provide against bursting by taking the stress off the walls of the tire with reinforced or non-expandable inner tubes and so-called "corsets," and we have varieties in valve fittings, if those we have won't hold air satisfactorily, while in connection with the use of tires there are many things we may consider before we can deem our equipment "complete." We can, for instance, save ourselves a lot of hard work in regard to the very necessary act of tire inflation, by the installation of a mechanical tire pump worked off any part of the moving machinery, and we can combine with this, if we choose, a tank or reservoir from which air may be drawn for the starting of the engine, or we can "make the engine do the work" by substituting a pump for a spark plug, or we can do without either of these mechanical appliances by buying our inflation in steel bottles containing either compressed air or compressed gases, and we can protect our covers from the festive nail by the provision of "nail-catchers," which will pull it out before it has got far enough to do harm, while, if we may judge by the wail of the "man in the street," he will certainly not consider a car "fully equipped" in muddy weather, if it be not provided with side-splash preventing guards.

Further, to provide for the well being of our tires, our garage stores will contain a can of tire paint for their protection and preservation, and a vulcanizing outfit for repairs, and in our tool box we will need repair outfits—of which we have several varieties to choose from—to test the pressures, various tools for the removal and replacement of the covers, and last, but not least, a jack with which to lift the car when tire repair is needed. Here we have a great variety. We can lift by screw, by ratchet, or by worm, by hand or by foot power, hydraulically or pneumatically.

### MR. PENSO'S VIEWS ABOUT JAMAICA

G. N. Penso, a carriage builder of Kingston, Jamaica, West Indies, again visited the convention. The carriage trade is improving on the island and is more prosperous than before the earthquake. The island has a large surplus, which has actuated the Legislative Council to reduce the duty on some lines from 162/3 to 10 per cent., which includes the carriage and harness trades. The people have adopted the American styles of carriages and harness, using mainly light vehicles.

Nine-tenths of the material used in the carriage trade is imported from the United States. His visit both was to get new ideas and improve the method of carriage building in the island. As to the heavy wagon trade in the country districts, the people use the native built wagons, which are not as heavy as those in use in the United States. Not much American harness is used, as the people think it is too small and not strong enough, but many are beginning to see where they are wrong and that American made harness is very serviceable. The English made harness is used mostly. Mr. Penso has a friend who bought an American second hand harness, has used it two years and will now use no other. All English saddles are used for horseback riding, as the American saddles are considered too narrow. The Hub has been very popular there among the carriage trade.

## REPORT OF COMMITTEE ON GOOD ROADS

By George A. Brockway, Chairman, Homer, N. Y.

The value of good roads cannot be overestimated. The county or state cannot attain to its full share of prosperity until at least the main highways have been properly repaired and improved. Steam and trolley railways will not and can not take the place of public thoroughfares. The construction of such railways simply create a demand for a better condition of the public roads. The distinction between good roads and bad roads implies that the communities through which they pass are progressive or dormant, prosperous or non-prosperous.

The proper maintenance, repair and improvement of the public highways is dependent upon a system carefully devised and backed by skilled and experienced direction. Drainage, grading, crushing stone, the selection, hauling and handling of stone and gravel or other material, and methods of placing the same on the road, all suggest the many details which tend to economical and good results.

Good roads are important to the financial, social, and educational welfare of any community within any state, and any enumeration of their advantage is likely to include all the benefits.

I have been pleased to note that a resolution has been passed by the National Congress calling for the appointment of a committee to investigate and to report as to the best means to be adopted to the end that the federal government may aid and assist the various states in the improvement, maintenance, and repair of the main thoroughfares within such states.

It seems to me that all civic bodies similar to our own should at once interest themselves to the extent that sub-committees be appointed to aid and assist in furnishing information to this committee, and also to advance such ideas as might seem most advantageous to the interests represented.

I believe that our organization is in full accord with that which seems to be the prevailing sentiment throughout the country; namely, federal assistance or federal aid in solving this all-important road question, and perchance, in assisting them in the construction or maintenance of highways which doubtless will be designated as federal highways.

From a business standpoint it strikes me that it is important that a national department of highways be established. By referring to the report of the committee on good roads by Morris Connolly, of Dubuque, Iowa, who was chairman of that committee in 1911, I notice that he refers to the National Bureau of Public Roads at Washington; that he speaks of the work that has been performed by this bureau through its engineering and chemical divisions; of the numerous tests which have been made of the various materials; of the advice that has been given relative to construction, etc., and I am constrained to call attention to the fact that this bureau is simply an adjunct of the Agricultural Department. It is not clothed with sufficient power or authority to take the initiative or to demand the solution of this great question which is now confronting us. I believe that this body should by resolution demand a national department devoted entirely to this great work.

I have formed my conclusion by observing the manner in which the highway work within my own state and within my own community has been conducted. I do not wish to criticize any administration, but I do wish to make the broad statement that thousands, aye millions of dollars have been lost because of inexperience, change in administration, and the lack of system.

I have taken the pains to gather information from those who have been closely identified with the highway movement of New York state, and have come to the conclusion that a uniform system and uniform practices are essential in carrying on highway work, and that such a plan should be so elastic that it would provide for the variation in soil conditions and climatic changes, at the same time taking into consideration the traffic demands.

I judge from the reports that I have received by letter from members of this committee, that to a great extent one idea seems to prevail, and that is to construct miles and miles of macadam roads connecting the centers of population, and having no regard for the tributary roads or to a comprehensive plan of general highway improvement.

In those reports I find much interesting information. From Ohio it is reported that great interest is being taken in road improvement. While the automobile interests have agitated to a great extent the movement for better roads, yet the farmer is beginning to realize that he will reduce his cost of production by joining in the good roads movement and making it possible for him to haul the products of his farm to market in very much shorter time, and with less wear and tear on his equipment. Only three counties in the state report no improved roads, while 26 counties report less than 10 per cent. improved, 42 counties report 25 per cent. improved, 18 counties report over 50 per cent. improved, and eight counties report over 75 per cent. improved. And while the special election held September 3 voted down the proposition to bond for fifty million dollars for good roads, the people of that state are optimistic and believe some plan will be devised to carry on the good work started.

From Louisiana and Mississippi the reports are not as encouraging as could be wished, but the people are alive to the fact that the developing of good roads is a necessity for their future welfare, and it is only a matter of a short time when better roads must come.

From the Pacific coast states the reports are very satisfactory. California has recently voted eighteen million dollars, all to be expended on good roads. Many contracts have been let, and many roads are under construction, and it is believed by the time of the Panama-Pacific Exposition in 1915, California will be well in the lead in the matter of good roads over all other states. In Oregon good roads are being built, not only by contract, but by convict labor, which seems to work out very satisfactorily. In the state of Washington the good roads movement is being agitated and satisfactory work has been done.

From New Jersey it is reported that a large amount of money is being expended, not only in construction, but in keeping improved roads in proper repair.

In Missouri a trunk-line road is under construction from St. Louis to Kansas City, and a general movement is in effect to improve the highways of the entire state.

In fact, the reports from various other states show that much work is being done, and within a very short time the highways will all have been improved, which will work out to the advantage of every one.

In 1898 there was no definite plan in any state for highway improvement. The law simply provided means by which a start might be made. Those in authority in the various states at that time naturally started the work as best they could from various sources of information. This included the con-

sular reports of foreign countries and reports of the work then being performed in Massachusetts, Connecticut and New Jersey. The policy as inaugurated was the construction of macadam roads by building little dots here and there in the vast sea of highways of the various states. As the work has progressed from stage to stage it seems to have been impossible to broaden out or to pursue any other than the same old policy stated on information and belief only. The result has been the getting into a rut and remaining in a rut so far as elasticity of plan is concerned. Attempts have been made to devise a plan by which roads might be built suitable to local requirements, but either the law in the various states has fallen short or else the interpretation of the law by those in authority is wrong. In my state dissatisfaction prevails on account of the expensive cost of construction of many roads and the very small percentage of the total mileage of the state which it would be possible to improve, leaving an extremely large amount of mileage for which no provision or definite plan of improvement has been devised. The people of the state are demanding a much broader and more elastic policy.

It is my judgment that a national department should be established, that the various states be encouraged in establishing state highway department, and that on and after a fixed date all highways designated as federal roads, which would possibly mean thirty or forty thousand miles, being the main arteries connecting capitol centers, should be placed under the immediate direction, by rule and regulation, of a centralized authority.

The character of construction or improvement of any such federal highway should be that which is suited to local requirements, and of such a nature as shall be suited to the needs of the traffic to which it naturally would be subjected. The construction of a highway costing twelve to eighteen thousand dollars per mile, in a locality where an expenditure of one, two or three thousand dollars per mile would carry the traffic just as satisfactorily, cannot be regarded in the mind of any thinking man as a wise policy.

The plan that I would advise, so far as it would relate to federal highways, is that all such federal highways, where the same are unimproved, should be treated by the use of local material, with local labor, properly fitted to local conditions, and by the use of foreign material where the same is necessary and at a reasonable limit of expense.

In laying out a plan of this character or in considering the feasibility of such a plan, naturally and necessarily there must be a department created for that express purpose, and the head of such a department naturally would be careful to avoid any controversy or unnecessary criticisms which might arise antagonistic to community interests.

I do not believe in a system, or the establishment of a system whereby the federal government would undertake the construction or building of roads, but rather a system by which the federal government would aid and assist to a certain extent where the authorities were willing to conform to certain rules and regulations prescribed. The execution of a proper plan properly devised and worked out would result in a double economy of work performed along lines which would harmonize with the possible later permanent improvement by the state or by the community. Culverts could be constructed after standard patterns and located permanently as regards any future improvement, widening and grading would be done along the same lines, and while providing a present improvement, would also place each yard of material in the place where it would eventually be where the road to be improved later in some more expensive manner. This would be the educational feature which could be enlarged upon by the utilization of local labor, and by the calling upon local authorities to perform work of this character.

The greatest obstacle to be surmounted is the fact that there are but very few persons in any state who have a thorough knowledge of road construction gained from practical experience, and we know that practice makes perfect. It is

in my judgment that no state in the Union can devise a plan that will be successful, or a plan by which desired results may be attained, excepting that their plan for such purpose is so comprehensive and so broad that it will tend to complete a vast organization built up by active interest on the part of local authorities, and covering every section, no matter how small it may be. You cannot hope to successfully undertake to line up a system of highway improvement for any state for any special interest. You must bear in mind that highway improvement is for the express purpose of increasing the value of the taxable assets in the states. I am firmly convinced that some of the states have gone road crazy and that it is high time to call a halt until such time as a proper plan may be devised by which best interests may be conserved, and by which the moneys available for purposes of this character shall be honestly and intelligently expended to the end that every dollar of money for such purpose will be the means of obtaining a dollar's worth of such improvement.

On motion the report was accepted and placed on file.

JOHN McGRATH: Mr. President, coming from the state of Ohio, I wish to correct an impression which that paper conveys to my mind and which perhaps it may convey to the minds of some of the other gentlemen. The writer speaks of the state of Ohio as having voted down a bond issue of \$50,000,000. It is true that they did so; but the state of Ohio already has a very admirable system of road laws. We are not above criticism; nothing is. Still, they are liberal, and many good roads have been built under the laws provided. They provide, among other things, if the country or township wishes to take advantage of it, state aid. The state pays a certain percentage of the cost of the road, the county pays a certain percentage, the township, and even, in some places, the abutting property owners pay a very small percentage. Under the road laws in Ohio a large mileage has been constructed. In northeastern Ohio the county of Cuyahoga and the adjoining counties have built combination roads. They are half brick and half dirt roads, or half macadam roads. Cuyahoga has built from the public square in Cleveland southeast to the county line; the next county took it up and carried it across the county; the next county carried it to the Pennsylvania line. There are good roads in Hamilton county. There are also bad roads in all these counties. While the electorate of Ohio numbered 1,250,000, there were only about 500,000 votes cast on this constitutional amendment proposition. The \$50,000,000 scheme was defeated by 1,200 votes, and it was defeated right in the home of the farmers. They felt that there had been so many good roads built in Ohio that it was unfair to tax the counties who had built so many good roads for the benefit of those which had not.

## THE AUTOMOBILE SHOWS

Allotment of spaces for the Annual Automobile Show to be held this year in New York for two weeks in the two buildings, Grand Central Palace and Madison Square Garden, have been made. There were 87 applications for space from automobile manufacturers and 403 from accessory manufacturers, assuring a record breaking exhibition that will surpass any previous exhibition held in this country.

Under the plan this year a single admission will provide admittance to both buildings, pleasure cars being shown the first week and commercial vehicles the second week.

## CHANGES

W. J. Voit, manager of the Diamond Spokane branch, has been given charge of the Los Angeles branch, which is now one of the largest Diamond branches in the west.

F. O. Nelson, manager of the Los Angeles branch of the Diamond Rubber Company, of New York, has resigned after eleven years of service with the same company to enter business for himself.



# CREDITS AND COLLECTIONS IN THE VEHICLE BUSINESS

By Charles H. Hassert, Philadelphia, Pa.

My mission here today is to explain the law, to light your path and lay bare to your gaze the many traps and pitfalls that lie in wait for the manufacturer who extends credit to a purchaser. Unfortunately, I am not much of a noise maker, but I will attempt to shed floods of light upon this subject. What you need is light and not noise. The subject will be treated from the standpoint of Pennsylvania law, with which I am most familiar. From whatever state you may hail you will probably find that your law is similar. For your better understanding I will in each instance refer to the article being sold as a carriage.

There are five methods in general use by which the vendor endeavors to secure the payment of the balance of purchase money due him. In the order of their importance and value they are as follows: The Instalment Lease, the Conditional Sale, the Judgment Note, the Promissory Note and by Suit at Law on the Book Account.

The instalment lease is a contract for the rental of the carriage. It is very similar to a contract for the lease of real estate. The lessee agrees to pay a certain sum per week or per month for the use of the carriage. When such payments aggregate the purchase price of the carriage the lessor agrees on the payment of a nominal sum to him by the lessees to execute a bill of sale for the carriage, and thus vest the ownership thereof in the lessee. This is the distinguishing feature of the instalment lease, the manufacturer parts with the possession, but retains the title; or, in other words, the ownership of his goods. A properly drawn instalment lease is generally held to prevent the passage of title as against the lessee and as against the whole world. This effect as to third parties is extremely important. If the lessee attempted to sell the carriage to a third party, even though the latter had no notice of the lease, you could follow it and by process of law retake it. If the carriage were levied upon by the sheriff on an execution issued against the lessee by third parties you could file a claim for the carriage, and in the event of failure of the sheriff to heed your claim you would have an action against him for damages.

The instalment lease also has this advantage. If the lessee defaults in the payment provided for in the agreement, you have several very excellent remedies against him. First—You may retake your carriage, peacefully if possible, without any proceeding at law whatever, or if you can not take it without causing a breach of the peace, you may cause the issuance of a writ commanding the sheriff to take the carriage from the lessee and deliver it into your custody. Second—If the carriage has been in use for such a long period of time or has received such hard usage that you deem it inadvisable to retake it, under the terms of the lease you may enter judgment against the lessee for the amount of the unpaid rental. In this respect it is very similar to a judgment note authorizing the confession of judgment against the maker in the event of his failure to perform in accordance with the terms of his agreement. The power to confess judgment is a great time and money saver, as it avoids the necessity of bringing the ordinary suit at law in order to recover a judgment. In the city of Philadelphia, anywhere from one to three years may elapse before a suit on the contract would be tried and determined. By the confession of judgment you accomplish in a few minutes what would otherwise require years to accomplish, and the judgment which you secure is superior to that which you would secure in an ordinary suit, inasmuch as it contains a waiver of the exemp-

tion laws, which I will explain further under the head of judgment notes.

I may further state that if the lessee in an instalment lease should transfer the carriage to a third party in an attempt to pass the title thereto, he would be guilty of the crime of larceny by bailee, which is punishable by fine and imprisonment.

It is customary to attach an ordinary form of judgment note to the lease, which is executed at the same time. The object of this is to enable the lessor to enter judgment on the note instead of on the lease, though the latter might be done. This course eliminates certain pleadings and secures certain advantages which are absent when judgment is entered under the lease.

As I have said, there is no instrument which affords absolute protection, and there are objections to the instalment lease, but they are all, or practically all, relative to the collection of the judgment and would more properly be considered under the head of judgment notes. All in all, the instalment lease is the best instrument devised for the protection of the manufacturer.

We now come to conditional sales. The distinguishing feature between them and the instalment lease is that the balance of purchase money does not profess to be paid as rental. It does, however, state that the title or ownership of the carriage shall not pass until the performance of certain conditions, namely, the payment of a certain sum within a certain time. The effect of a conditional sale is to prevent the passage of title to the carriage, from the seller to the purchaser, in accordance with the terms of the instrument, but only as between themselves. As soon as the rights of innocent third parties intervene the law assumes the passage of title. This can best be illustrated as follows: If you sell a carriage to B under a conditional sale and before he has paid for it he sells it to C, who is an innocent third party, or, in other words, had no notice of the conditional sale, C, will take a good title. You may suggest the recording of the conditional sale for the purpose of giving constructive notice to all the world, but such an instrument is not recordable, at least under the recording act of Pennsylvania. This, of course, would not be true had C actual notice of the existence of the conditional sale; but notice in such a case is very difficult of proof. If a creditor of B were to levy upon the carriage it would be sold and the proceeds used to pay B's debt to another. If B were thrown into bankruptcy either voluntary or involuntary, the carriage would form part of the bankrupt's estate and the proceeds divided among B's creditors, of which you would be one, taking pro rata with the rest. All of these things are untrue of the instalment lease. A conditional sale may contain a warrant of attorney for the confession of judgment, but such judgment is open to the same objections as lie against a judgment entered under an instalment lease or a judgment note. The greatest objection to a conditional sale is the ease with which the purchaser can dispose of your carriage, put the money in his pocket and cheat you out of your just deserts.

We now come to judgment notes. When you deliver a carriage to the purchaser upon payment of part of the consideration money in cash and the balance being represented by a judgment note, or in fact, any kind of a note, the transaction is an absolute sale; there is an immediate passage of title or ownership from the seller to the purchaser, just as if the full consideration money had been paid in cash. If the purchaser should default in the payment provided for in the note

your only remedy is to enter judgment under the note and issue execution against his property. You cannot retake the carriage; it has gone out of your hands forever. It is true that the carriage may be one of the articles upon which you would levy, but you would have no more right to that specific carriage than if it had been purchased from another person.

Let us see what happens when you attempt to collect the judgment which you have secured. As a general rule the man who is willing to sign a judgment note owns no real estate. If he does, and it stands in his name on the records at the time you enter the judgment you are fairly well secured. If he does not he may anticipate your entry of judgment and sell the carriage to another. This is entirely valid in law in the absence of fraud, which is hard to prove. The carriage is gone, you spend a considerable sum of money in entering judgment and issuing execution thereon, what happens? When the sheriff is about to sell the property of the purchaser (now the defendant in the execution) his wife comes to the front and files a claim of ownership of the goods which have been levied upon. This usually stops the sale; the matter is thrown into court for a jury to decide the ownership of the goods, and in the trial you have as much chance as the proverbial camel has of getting through the eye of a needle. If you attempt to forestall a claim by the wife by having her join in the note this will not be of much value, for the debtors usually have a host of friends and relatives who hasten to their assistance in the hour of trial and who will assert ownership of the goods in question. Suppose the purchaser has real estate standing in his name at the time of the execution of the note. This is not absolute security, for he may transfer before you enter judgment. When you do enter it he may no longer have title to the property.

A judgment note upon which judgment has not been entered is of no more value than an ordinary note. It is not the note itself, but the judgment which is entered under it that constitutes a lien against real estate. Of course, if there is collusion between the judgment debtor and his grantee, and you can prove it, you may by proceedings in equity have the conveyance set aside as being in default of creditors, but as a general rule the amount involved is hardly sufficient to warrant the expenditure of the large sum of money necessary to conduct proceedings in equity. The main value of a judgment note lies in the ease with which you acquire your judgment, merely by exercising your power to confess judgment against the maker. This feature is true of the instalment lease, the conditional sale and the judgment note and all of these instruments generally contain a waiver of the benefit of any exemption laws of any state. Practically every state has upon its statute books a law or laws exempting certain property from execution and sale. The object of such laws is that creditors cannot completely strip a man of his belongings and render it likely that he shall become a public charge. In the state of Pennsylvania the exemption is property to the extent of \$300. In certain states the law will not permit the debtor to waive the benefit of his exemption laws inasmuch as they are not passed for his exclusive benefit, but also for the protection of the public. In Pennsylvania the courts permit a waiver, and we can sell anything belonging to the debtor.

The judgment note is generally regarded as being in every respect the peer of the promissory note, containing all of its good points and none of its bad ones, but this I think is error. Where judgment is entered upon a judgment note the judgment debtor may have it opened for any one of a number of reasons. For instance, if he contended that the quality of the carriage was not such as was agreed upon he might have the judgment opened, secure a trial by jury, and if he proved his contention it might result and probably would in reducing the amount which you would recover. This is always true of a judgment note, and there is no way to eliminate this feature. If the judgment note is assigned (for it is a non-negotiable instrument and passes by assignment rather than by endorsement) this does not cure the defect. The maker will always have the

same defense against the assignee as he would have had against the original judgment creditors. This we will find is not true of promissory notes.

Let us look at promissory notes. You must institute an ordinary suit at law to recover on the note. It is the same as in the case of an ordinary debt. As I have stated before, anywhere from one to three years may elapse before you secure a judgment, and in the interim the debtor is at liberty to dispose of all his property. In fact, he need not dispose of all, for this note contains no waiver of the benefit of the exemption laws, and in the absence of an express waiver he retains that right. He could, consequently, in Pennsylvania, retain \$300 worth of real or personal property without fear of molestation. In a suit on a promissory note the method of procedure is to produce the note in evidence, prove the signature and rest. The burden of proof is then thrown upon the maker, and he is required to produce evidence, sufficient in law, to escape liability. One advantage in suing upon the note is that you are not obliged to produce your books of original entry and prove the debt itself. Another great advantage is this, that while the maker may avail himself of almost any defence as against the original payee of the note, he is practically precluded from any defense whatsoever when the note has been indorsed by an innocent holder for value before maturity, or, in other words, before it became due. There are certain defenses of which the maker can avail himself as against the original payee or any subsequent holder, for instance, forgery, but it may be stated as a broad, general proposition, that when a promissory note is endorsed to another for consideration, before maturity, the maker can have no defense. It is the course of a wise man not to maintain suit himself on the note, if he is the payee, but rather to endorse it to another and allow him to sue the maker.

The ordinary suit at law on the book accounts is paradise for the fraudulent debtor. You incur cost in commencing suit; the debtor overdoes himself in swearing to an affidavit of defense which is sufficient in the eyes of the law, and in the absence of which you could secure judgment in a short time. You consume four or five days of your valuable time in sitting about the court room awaiting the trial of your case. Conceding that you ultimately do secure judgment for the full amount of your claim, the defendant in the meantime has transferred his real estate, the defendant claims the benefit of the exemption laws, and if his personal property is worth more than \$300 his wife steps in and claims all over and above that sum, and between the two the only right that you have is to pay your attorney a substantial fee for services rendered. If you can secure a settlement within a reasonable amount of the sum which is due by all means accept it.

You have heard in a general way the advantages and disadvantages of the methods used to secure the payment of purchase price of goods. If you use any of them you know its weak points and its strong points. You are a preferred creditor according to Cohen. It seems that O'Brien had advanced money to Cohen to enable him to continue in business. When O'Brien detected clouds on Cohen's financial horizon he went to him and explained to him that as long as he (O'Brien) had been so good to Cohen that he deemed it only right that he should receive a little more than the other creditors. Cohen said: "I will make you one of my preferred creditors; it is all I can do." "That's that?" asked O'Brien. "Vell," said Cohen, "de preferred creditor he knows just now dat he geth noddings and de oder feller don't find that out for six months yet." You know now that you stand a good chance of being cheated and the other fellow will not find it out until he is actually cheated, and when he is cheated it is usually done so neatly that he cannot explain how it was done.

The instalment lease is the only method that furnishes any real degree of protection, but I reiterate that even the lease is not invulnerable to the attacks of a shrewd and wily practitioner of law. Probably after a little more experience we will do as the automobile manufacturers and sell only for cash.

# THE NEED FOR A TRAFFIC MANAGER

By Charles T. Bates, Philadelphia, Pa.

The success and extent of any business largely depend upon the degree of the producer to place his commodity in the hands of his consumer with the least possible delay, in the best condition and at a minimum expenditure.

There is no greater means for this saving of expense than lies in the avenue of freight transportation—and perhaps no means which is less familiar to the average business man. To obtain the required results it is necessary for him to be conversant with all the complexities of the shipping question, with its constantly changing conditions and requirements, and to profit by every opportunity presented for the most expeditious handling of his merchandise.

During the past, while every effort has been exerted to lessen the cost of production, comparatively little attention has been given to the actual expenditure for freight transportation other than as a necessary outlay incident to manufacture. Regardless of the equity of the charges assessed, and that the probability is just as strong that these charges are erroneous as it is that they are correct, the shipper has demanded redress from carriers only for actual loss of merchandise, or for damage in its transportation, or when the error in assessment has been so glaring as to be self evident.

Moreover, this is a question which until recently has not been given grave consideration, because so frequently the loss has been entirely concealed or has been apparent in so small a degree in the particular instances, that to the casual observer, and even to the careful shipper, it has appeared to have been scarcely an important factor for his consideration—in his effort to minimize the cost of production—while in the aggregate the amount is so great that it reaches into millions of dollars annually. If he but realized it, the added burden thus carried is appalling in its immensity—both to himself and to his consumer.

Shippers are not to blame for their inability to prevent these losses. The time is past when any shipper can have even a working knowledge of the entire traffic situation, and unless the knowledge does cover the entire question he is incapable of properly handling it to meet the needs of his own business.

The magnitude of the organization of the carriers, the complexities of the issues involved and the enormous scope of the difficulties encountered in their operation make it impossible for any, except those expertly trained in traffic affairs, to keep in touch—even in the most remote way—with the ever changing problem. It is as ridiculous to imagine a business man perfectly familiar with all these diverse questions as it is to imagine him in a position to enter any court of law and successfully try out a civil suit.

Of course, in an enterprise so vast, it is manifestly impossible to eradicate all opportunity for error. It is equally evident that proper action has never been taken whereby carriers voluntarily and promptly have rectified their errors without involving the shipper in that annoyance which, in the past, has caused so much complaint.

A variety of causes has contributed to the ever recurring loss sustained by existing conditions. The chief of these is that the carriers have never been able to secure agents who can be relied upon to prevent traffic complications; nor will they ever be able to do so (for should they, all the employees of every railroad would be vice-president at least).

It is also evident that in the past carriers have not at all times provided the necessary means for the checking of their accounts so as to minimize these errors.

Consequently the solution of the problem has developed

upon the shipper; but we have shown that the average shipper knows even less concerning the matter than does the least capable agent. Therefore, we must look elsewhere for a solution of the problem.

The need has been met in the traffic manager. Some time past the larger individual shipping interests realized the necessity for concentrated action and for expert handling of their shipping departments. The result has been the trained shipping agent—the traffic manager—the man who has studied the question, and has made it his profession. The best traffic experts today are those who have had years of practical experience, inside and outside the railroads. Consequently they understand the question from every viewpoint.

It is the duty of the traffic manager to be master of every problem arising in the movement of merchandise, from the time it is placed in the hands of the carrier until it is receipted for by the consignee. It is his obligation to be familiar with the best methods of packing in order to obtain the safest transportation and at the same time a minimum expense. He must be aware how to route shipments so that the most advantageous rates may be secured; he must be versed in every arrangement of the various carriers for diverting freight in transit and reconsigning it when it has reached one destination and can be used to better advantage at another. Moreover, after the actual delivery of the consignment it is essential that he be able to correctly audit his freight accounts and be familiar with rates to an extent which will enable him to know if the carrier has performed his contracted obligation to the best interests of his shipment, and to force refund, in the form of claim, for all charges in excess of the lowest possible charge under the law. He must be familiar with the workings of the Interstate Commerce Commission and the various State Railway Commission, so that he may be in position to claim redress for excessive and discriminating rates.

These, in part, are the requirements of the men who have been chosen by large shippers to manage their interests along traffic lines. You can readily see that men with such training naturally are high salaried employees—and justly so, after their years of training and experience. They are trained shippers, and the extent of large business enterprises not only warrants, but in fact demands, the services of such men.

Large interests have recognized the necessity for such service. The small shippers are in no less need of the same expert handling. Your association, it seems, is particularly in need of any help which can be secured to lessen the cost of production. The advance of the self-propelling vehicle has made it imperative for the manufacturers of the non-self-propelling type to use every means in his power to extend the territory of his sales. No opportunity for this saving is as great as that afforded to shippers through the agency of the traffic manager. The problem has been, however, that the individual smaller man has been unable to afford the monetary outlay necessary to secure such service upon a profitable basis.

This difficulty has already been overcome, and it is hoped to show your association that this service is open to its members for a most nominal outlay.

While it would be impossible for many of your members, individually, to provide themselves with this service, as an association the outlay per capita would indeed be small, and every member could secure the same service which the larger individual shipper has provided for himself at so great an outlay.

The members of this association are widely scattered. Con-

sider, please, the complications which must arise in forwarding shipment from any of the centers of vehicle manufacture to any of the larger cities of the country, with the many available routes open, each with its own rate, or combination of rates. No doubt you are aware that what often appears to be the natural route is by no means always the cheapest one. It is only to the "trained shipper" that the lowest charge is available.

The Interstate Commerce law has made it illegal for any carrier to have more than one assessment for any commodity between any given points at the same time and in the same direction, shipped under similar circumstances.

Moreover, that law has provided that such charges for these shipments must be shown in regularly published tariffs, on file with the Interstate Commerce Commission. These tariffs must also be placed on file at the office of the carrier, so that whoever will may refer to them.

This being the case there would appear that there would be no confusion in obtaining the lowest charge between any two points, yet it is safe to say that not one person in ten can actually properly read the simplest tariff on file.

In addition to this, the law does not prohibit each carrier from filing its rates and having its charges between these same points, nor does it make it possible for the shipper to know how to secure this information from various tariffs with the individual peculiarities made necessary by local conditions. Training alone can do this.

For example, if you should require the rate between any points and should apply to a carrier for that rate, you would naturally expect to be furnished with the lowest charge. You would probably secure it, as far as it applied in connection with that carrier. At the same time it is equally probable that the lowest charge may be effective in connection with another route equally advantageous for your shipment, but not applicable in connection with the carrier to whom you applied for the rate. It can scarcely be expected that the carrier would

to handle the interests of so widely varied a number. Let us assume, however, that the association has secured the services of such an expert. He is centrally located. His first step is to secure tabulated information concerning the conditions surrounding the individual shipper.

To illustrate what I mean, and for your convenience, I would

Form No. 2

## CARRIAGE BUILDERS' NATIONAL ASSOCIATION REQUEST FOR SHIPPING INFORMATION

1912

Traffic Manager,

C. B. N. A.

Dear Sir—As promptly as possible, please furnish full packing and shipping instructions, including rate, for shipment described below:

1. Shipment will consist of.....
2. Shipment can be shipped: Set up.....Knocked down.....  
Crated.....Boxed.....In bales.....In bags.....
3. Approximate weight of shipment will be.....
4. Approximate bulk of shipment will be.....
5. Dimensions of shipment will be.....
6. Shipment will move: Date.....
7. Consignee's name is.....
8. Consignee's address is: City.....County.....State.....
9. Shipment can move rail and water? (yes or no).....
10. Additional information.....

Truly yours

(Member's Name)

call your attention to the enlarged specimen of an index card (No. 1) showing the information to this effect. This would enable your traffic manager to have before him at all times such statements necessary for the successful handling of the traffic problems of any member.

Now, please look at the other card (Form No. 2) which I have prepared for your inspection. You will notice that every possible question which may arise has been provided for. It is my understanding that members of this association are fortunate enough to know for some time ahead just when they must ship, and there is scarcely a point in the United States where the blank form could not be filled in, sent to your traffic manager, answered (on No. 3) and returned within one week. The few instances where this would be impossible, the telegraph could be used.

Your traffic manager would be prepared to take full charge of the shipping department of each member just as thoroughly as if he were located in your own office. He would furnish instructions to your employe as to the best methods for dealing with each consignment, how to pack and load, when and how to reconsign and divert (when the necessity demanded); he would study the conditions and needs surrounding your plant and help you to improve them, and finally, and by no means the least important, he would either personally superintend the auditing of your freight accounts and institute claims for you in the name of your association, when it was found that refund was due, or would show you how to do this for yourself.

You have shown your appreciation of the necessity for this latter end of the question by your recent authorization for a freight bureau to audit your bills. Without making any comment whatever about any company, which audits only, I would like to say that there are a number of such organizations which have been formed at various times. Some of them in a measure have been useful; a few very successful. In the case of the successful ones, however, the scope covered has been too limited. They have dealt with but one or two sides of the problem. Quite frequently they have been officered by inex-

Form No. 1

## TRAFFIC RECORD

No.....

—OF—

MEMBER'S NAME.....  
LOCATION

City..... County..... State.....

Mlg. Address.....Exp. Address.....Tel. Address.....

### SHIPPING FACILITIES

1. Name of railroads convenient.....
2. Distance from each railroad.....
3. Private siding arrangements.....
4. Hauling service.....
5. Physical peculiarities of location.....

### NATURE OF SHIPMENT

1. Commodities shipped.....
2. Percentage car loads.....
3. Percentage less than car loads.....
4. Territory covered.....

### GENERAL

1. Objection to rail or water.....
- 2.....
- 3.....
- 4.....
- 5.....

quote you the rate of its competitor. The rate quoted you would be a perfectly legal rate, and the fact that you were not aware of the lower rating in connection with the other route would be your misfortune. It is the business of the traffic manager to know both rates in such a case.

At first thought it would appear impossible for one person





Tennessee. Now, the rate on pig iron from this point in Tennessee to the point in Delaware was, we will say, \$4.65 a gross ton.

From the same point in Tennessee to more distant points in Delaware, to points in New Jersey, and points in Pennsylvania, the rate has been \$3.85 a gross ton, a difference of 80 cents a gross ton, for a longer haul than for a shorter haul in a direct route.

It is obvious to any of you who understands traffic affairs that this is a direct violation of the Act to Regulate Commerce. The old rate had been used for years; and no one had noticed it; and when the consignee in Delaware wished the rate to his station he simply looked for that rate or had it quoted. The rate used was legally in effect, published and filed with the Commission, and yet was illegal in that it was a discrimination against the destination in favor of the more distant points.

A traffic manager would have found this error two or three years before, and would have saved several thousand dollars—perhaps enough to have paid his salary for the entire time.

As it now stands the rate has been reduced, and the matter will be taken up before the Interstate Commerce Commission for reparation for the loss sustained during the past two years only, owing to the fact that a longer period than two years is debarred by the statute of limitations. This merely illustrates to you the need for expert service.

It is rarely that the identical question is encountered in more than one traffic problem, in more than one claim (perhaps with the possible exception of a number of shipments moving under the same erroneous rates). Consequently it can be seen that it is from a knowledge of the study of innumerable cases and familiarity of the legal questions involved that the traffic manager is so valuable and so necessary.

It should be taken into account that a traffic manager would not suggest anything antagonistic between the carrier and the association. In fact, the establishment of such a department of the association would not only tend to eliminate any differences which may now exist between each individual member of the association, and any particular carrier, but it would also tend to facilitate the investigation of all matters now being handled.

No doubt you are aware that the dignity imposed upon by an association of this kind, acting as a body, is bound to have more weight than an individual can have upon any other body, such as a number of carriers, a commission or a classification committee; not so much that the latter resist any attempt at what may appear to be a mere unjust consideration, but the fact that with an association a greater number are affected, whereby it is not only politic, but absolutely essential that grave consideration be given to their requests.

The past relations between the public and the railroad have by no means been most agreeable or harmonious. Shippers who in their dealings with each other and with their customers have always been scrupulously honest, even to the minutest detail, have not hesitated to use the most questionable means to defraud the railroad, and not only have they thought that such methods have been justifiable, but have even considered that their ability to accomplish these ends has shown special business acumen.

When occasion has permitted they have at times unhesitatingly falsely classified the nature of the commodity to be shipped in order to obtain a lower rate; they have shown incorrect rating with a desire for reduced freight assessment; and in numerous other ways have even devised schemes to obtain transportation at less than their competitor.

While such past actions are greatly to be deplored the conditions which made them possible may after all be placed, at least indirectly, to the carrier. The constant cry for increased facilities for handling freight, and for enlarged terminals, as well as a desire to widen the scope established and the extent of its power, has caused the carrier to exert every effort to meet the demands for improved equipment and expe-

ditious handling of merchandise. This fact in itself would have been commendatory had it not so frequently been accomplished at the sacrifice of the various interests which it aimed to benefit.

Now, the traffic manager is an intermediary between the actual shipper and the carrier; he has the training and the knowledge which makes it possible for him to understand the working of the carrier, and at the same time he understands the working of the business which he represents.

You will see, therefore, that he has the decided advantage, not only over the carrier, but over the business man, and it is his aim at all times to amicably adjust any difference which may appear.

Briefly summarized then, your traffic manager will perform the following: He will furnish full information concerning packing, loading, hauling, carting, shipping, include rates and adjustments of freight on the shipment; second, he will place himself in touch with the classification committee, so as to take up any cases which need adjustment in the benefit of the association, and to instigate agitation for reduction; third, he will place himself in communication at all times with all the carriers for the adjustment of all differences, for the establishment of commodity rates, when class rates which are now in effect have been unwittingly adjusted against the association and its members, and will aim always to work with the railroads and not against them; fourth, he will also supervise all claims for the members of the association, and each member will be permitted to send his claims through the association and have him collect in the name of the association, thus eliminating much of labor and correspondence for the individual members. At all times he would be under the immediate control of your freight committee.

Anyone versed in traffic affairs needs but to look at the number of commodity traffics or exception sheets, and he will at once be impressed with the lack of commodity rates and special provision relating to the vehicle trade. The reason for this is most obvious. Neither a majority of your members, nor the association has ever engaged the services of an expert traffic manager to look after these general questions.

There is absolutely no doubt that the association needs a traffic manager. It is the aim of every member of this association to place in the hands of his customer the finest vehicle at the least money as it is possible. Now, if it is possible, by means of this plan, for him to save five or ten per cent. on each vehicle, or even three or four per cent. on each vehicle, it would be immediately possible for him either to reduce the price of that vehicle, to give additional value for the money, or to place the margin of profit beyond the danger line, which so frequently must be approached to offset the demand for the automobile.

It should be remembered that it makes no difference whether the freight charges are paid by the shipper or the receiver, the cost of production must include the cost of transportation.

It is by the closest study and by concentrated action of one who is versed in such matter that you can hope to lessen the cost of this freight transportation. Concentrated action along such lines is absolutely essential; for while each member of the association, individually, has an opportunity for himself, in his own territory, to establish equitable rates and facilitate adjustments of his commodity, yet it is only with the dignity and authority of a corporate body that you can ever hope to obtain the results which would make it possible for you to receive the full benefits which should be yours under the law.

It has been conservatively estimated that there are \$100,000,000 lost annually on account of overcharges. How much of this are the members of this association losing? How much of the amount that you are losing each year can you recover?

It has also been stated, on good authority, that any business interest can afford to pay one-tenth of the amount paid out in freight charges for the salary of a traffic manager, and by so doing not only will the service cost nothing, but in addition a saving would be secured.

Now, the plan that has been suggested most certainly does not contemplate an outlay of anything like 10 per cent. of the total freight charges paid by members of this association.

That associations, as well as individuals, have the need for such a service is most ably shown in the work of the Lumber Dealers' Association and the National Association of Automobile Manufacturers. Each of these bodies employs a high salaried traffic man, and the work done by them along the line of freight transportation and the adjustment of freight charges have been most satisfactory to these associations. They have been enabled to cut down the cost of production and thus widen their field of operation.

Your association has at times seen the necessity for this concentrated action, as shown by the most able results obtained by your freight committee. You have now authorized a claim or adjustment bureau to look after the interests of your members in the auditing of your freight bills; but you have still unperfected that greatest avenue for loss, that avenue of concealed loss, which could be prevented by a traffic manager to stop up the leaks.

The freight committee of your association is more essential than it ever has been. Why not extend the power of its operations by authorizing it to provide this additional service for your benefit?

Ample time has been afforded for the adaptation to the new conditions created by the new laws, and there is no longer any excuse for misunderstanding between the two great exponents of modern transportation, the shipper and the common carrier. The time is here when new methods for dealing between these exponents must be adopted.

Should not the Carriage Builders' National Association be among the foremost of the large associations which have realized this necessity?

### WHAT IT COSTS THE MANUFACTURER TO PAINT A FIRST-CLASS MEDIUM GRADE BUGGY

The writer made an extended trip recently among the representative carriage and buggy builders of medium grade work for the purpose of comparing working methods, and to learn at first hand the various operating influences that determine



Looking at the Balloon "doin' it"

the cost of manufacturing a buggy which sells to the dealer for \$60 to \$125 for open and from \$70 to \$200 for top jobs.

The difference in price is due almost entirely to the style of the body and seat and cost of the material and labor used in trimming the job. The difference in cost of painting is not much.

Shop conditions and the management of labor vary in a

greater or less degree in every factory. The overlapping influences that make for and against best results are seen at a glance by the trained eye.

One factory I visited where the foregoing prices prevailed, builds 6,000 buggies a year. The daily output runs from ten to fifty jobs. The painting department is operated upon the piece work system, the workmen receiving from \$1.25 to \$3



The Goodyear Balloon Ascension Daily

a day. When business is slack some of the men are laid off. Those who can turn their hands to more than one line of work, such as color varnishing and finishing or striping, are retained as long as there is anything for them to do.

A good, swift striper generally contracts for all of the striping, however, and hires his own assistants, and drops them as the work falls off. The prices for piece work in this factory for piano bodies and panel seats are as follows:

#### Bodies and Seats

Roughstuff and stain, six coats and labor.....	\$0.50
Rub with pumice stone (rubbing stone, or brick is not used) .....	.30
Sealing, material and labor.....	.15
Color, material and labor.....	.15
Color varnish, material and labor.....	.20
Rub with pulverized pumice stone, also coat of varnish..	.30
Rub again and finish.....	.40

\$2.00

#### Gears, Wheels and Shafts

Priming .....	\$0.04
Sandpaper and lead.....	.25
Glaze with putty.....	.10
Sandpaper and rub lead.....	.50
Color varnish .....	.25
Rubbing varnish .....	.25
Striping .....	.14
Finishing .....	.25
Prime, lead color varnish, stripe and finish shafts.....	.15
Add to above the cost of helpers.....	.05

\$1.98

#### Material Used on Gears, Wheels and Shafts

½ pt. priming.....	\$0.10
5 lbs. lead (two coats).....	.44
Putty .....	.05
1½ pts. color varnish.....	.45
1½ pts. rubbing varnish.....	.45
1½ pts. finishing varnish.....	.60

\$2.09

\$6.07 for the buggy finished complete.

The materials used upon this work are the best that can be procured. The cost of labor includes the wages of helpers who handle the gears, wheels, shafts, bodies and seats.

Another factory building a class of work which sells for the same price, in the territory covered by the first named, makes a job that costs \$6.50 each for the painting. There is a differ-

ence in the appearance but it is not manifest to the average buyer. It is there nevertheless, and the builders sold seven thousand jobs last year.

The superintendent of a factory which manufactures a cheaper class of work than those spoken of, and whose output last year numbered fifteen thousand jobs, informed me that the painting cost them not quite \$2.50 each. They sold them readily. "But," he added complainingly, "we were annoyed not a little by some of the cheap concerns who manufactured in much larger quantities," whose buggies, he assured me, cost but \$1.30 each for the painting.

## MOTOR CARS IN SOUTH AMERICA

### ARGENTINA

Of every 100 automobiles in use, 50 are French, 12 Italian, 12 American, 11 German, 10 English and 3 Belgian. All are gasoline machines. As far as known there does not now remain in use a single electric. There is no taxicab service in the district, though there are two automobiles for hire on the streets in Rosario and some dozen machines which can be had from the garages.

Five-passenger touring cars with hood are the most numerous. They are of 15 to 20 or 20 to 30 horsepower, with four cylinders, and are geared 1 in 3 or 1 in 4. Climatic conditions do not affect the local requirements as to equipment and finish, which are not closely defined, except that leather cushions are preferred. The consensus of opinion among both dealers and users appears to be that the car most adapted to the country is the one with large wheels, giving a 12-inch clearance, 56 to 60 inch tread, at least 20 to 30 and preferably 30 to 40 horsepower, double-phaeton body, high seats, with capacity for five passengers, and two folding seats, and full equipment, particularly including wind shield and top.

Motor cars sell at a very considerable advance over the retail prices in the countries of origin. Cars that are having the largest sale at present—Peugeot, Panhard, Fiat, Bianchi, Triunfo, and Mercedes. When all factors are taken into account it would appear that prices are comparatively high, and that the establishment of an exclusive agency by the manufacturer himself, with lower prices, would open a good market.

The demand is rather for high and low priced than for medium priced cars. In Rosario itself the high priced car has



Not a Sechler Buggy, but Mr. and Mrs. Sechler are enjoying the ride

recently dominated the market. Automobiles are as much a matter of fashion and luxury as of pastime, utility, or pleasure in this city. Through the rest of the district, however, cars are kept largely for practical use and the demand is for a strong, low priced car. Cordoba, perhaps, offers the best market for a medium priced machine.

The gasoline car is the only one adapted to this country.

The cities are too small and too far apart as yet for electric vehicles, and there are only a few where power can be obtained.

The only fuel used is gasoline, known locally as naphtha. It averages about 27.5 cents United States gold per gallon.

There are 12 automobile dealers in Rosario, with a few sub-agents in the other towns of the district, chiefly Cordoba. With but two or three exceptions, sales are made through large



Two Generations of Wheelmakers (Henry James and Son) and Jacob Gerhab, enjoying a boardwalk

jobbing houses. Direct representatives would certainly seem to be preferable, but three or four attempts in that direction have not met the expected success.

Rosario dealers cover nominally only the Province of Santa Fe; but, with the exception of Cordoba, scattered sales are made throughout all the northern half of Argentina. Commission is usually 10 per cent. Sales are made for the most part on a guaranty and on six months' credit, but as much as three years has been given. The cash discount is 5 per cent. A stout framed packing case is preferred, and damp proof wrapping is absolutely essential.

With the exception of one house, which has but just commenced an active campaign, sending out a number of salesmen, the local market for automobiles has not been well worked.

There is a prejudice against American cars. The first cars brought out were of cheap grades; if they had been properly presented they would probably have made their place. But extravagant claims were made for them; a false comparison was made with expensive cars of foreign make. The unfavorable impression caused by their failure to fulfill the promises made has lasted persistently, although it is recognized now by dealers that these cheap cars have been greatly improved. There is not a single American dealer or salesman in the trade, which is chiefly in the hands of foreigners.

### BRAZIL

In spite of the fact that the hilly and narrow streets in the city of Bahia are paved with rough cobblestones and are unsuited to automobiles, the number of machines in use has increased during the past year from 5 to nearly 50, and new cars are constantly arriving. Outside of the city itself motor cars can not be used because of the want of roads.

Only strongly built machines are adapted for use, and manufacturers should not attempt to sell any other kind, as many light cars that would last for years on good roads would soon wear out in this city. The local public apparently does not know how much even the best built cars can reasonably be expected to stand and judges cars by the number of repairs required, regardless of how the damage may have been caused. A car that can stand an unreasonable amount of rough usage advertises itself rapidly here, and is quite certain to sell others for its manufacturer.

Of the machines in use in Bahia at present, fully two-thirds

are of American manufacture, and seem to be giving just as much satisfaction as the more expensive British, French, and Italian cars. In addition to the pleasure cars there are six 4-ton freight trucks (four Swiss and two British) and one American motor bus with seating capacity for 12 passengers. This bus carries people between the upper and lower sections of the city for a fare of three cents, and it is said that on the day the service was inaugurated 2,000 passengers were carried.

### BRITISH OPINION THAT IS VERY FAVORABLE

Extracts from the London Times on the "Coming of the Cheap Car," give an excellent idea of the fine impression which the American low priced car has made in the United Kingdom:

"It would be invidious to mention particular makes in this article, but it may be said, generally, that the cheap British-made car is now enduring a good deal of effective competition from America, France, Germany, and Belgium, and that it will have to improve or endure a great deal more serious competition in future. To take one instance—there are cars made in the United States, some by tens of thousands and some by hundreds of thousands a year, which in the opinion of the writer are, for quality and price combined, as yet unapproached by any British manufacturer. This may be an unpalatable statement to some of the English manufacturers of this type, but it can hardly be denied that the competition of the American cheap car is only just beginning; that the old accusations of want of reliability, durability, and lack of finish are disadvantages which are more theoretical than actual, nowadays; and that the majority of cheap American and French cars today are much better than those of a year ago, being quite equal in all essential features to the so-called cheap British-made car.

"To put it bluntly, the fact is that there is no firm at present which has been sufficiently enterprising to lay down a large enough plant to manufacture small cars in sufficient numbers to make their production really cheap. There has also been a want of commercial ability in that, while in most cases the American cheap car is sold ready for the road, the British car is too often sold incomplete, being unprovided with headlights, hood, speedometer, and other accessories (either some or all) which have now become actual necessities. It is curious that, though some attempts have been made from time to time in this country to produce small cheap cars, costing, say, between \$500 and \$1,000, failure has too often attended these efforts either from lack of bold advertising or of proper commercial or engineering management. As every autumn show comes we see announced in the press attractive small cars of British manufacture, but the promises are rarely equaled by the performances. In short, this branch of the automobile industry has hitherto been avoided by big firms, possibly on good financial grounds, and has not received sufficient attention from those who have actually taken it up.

"It is hard to say how many persons there are in this country who would buy a really good cheap motor car, sold, say, at \$600, but if such could be obtained probably as many new motorists would be added to the automobile community as exist today, or some 250,000."

The editor of Motor, in a communication to the London Express, wrote:

"In England our largest output of cars is probably only one-fortieth of the correspondingly largest American firm. In fact, this handicap is such as to make competition in prices by any single English automobile concern an impossibility. The situation is undoubtedly a serious one at the present moment. It may be found to be infinitely more serious in the near future. The demand for the type of car which America is sending us has existed for some time and is growing every day. Further, a demand for an even cheaper car is only awaiting the arrival of the right vehicle at the right price.

"British makers have always regarded the small cheap car as more or less of a side line and have concentrated their energies on the medium and high priced vehicles, while America

has specialized on the cheap popular production. Those who get about on the roads of the country, however, are impressed more than ever this year by the enormous number of side-car machines—that is, motor bicycles having side-car attachments. It must be obvious that such a machine is only a compromise and that those who use it would prefer a light car if it were available at the price they can afford."

### CATALOGUES

Piedmont Buggy Co., Monroe, N. C., have just issued a catalogue that is inspiring as an example of southern enterprise in buggy building. The styles are good, various and adapted to needs of the buyer judging by the illustrations. Some show distinct novelty of design without freakishness.

Mifflinburg Buggy Co., Mifflinburg, Pa., show new styles of "high grade, hand made" vehicles in a catalogue of rare excellence.

S. R. Bailey & Co., Inc., Amesbury, Mass., in a folder illustrate and describe the new Bailey electric roadster, with Edison battery. We always look for novelty and great worth in construction, along with beauty of design in work from the Bailey factory. This new creation meets every expectation.

The Durant-Dort Carriage Co. catalog just to hand is still another evidence of the gratifying advance in typographical improvement that is being shown by the carriage builder. In arrangement, in color combination and in all around attractiveness it is admirable. The series of the work made, named "Blue Ribbon," "Diamond," "Standard," and so on are well illustrated and described with understanding to the dealer, and all in all, we offer our congratulations on a difficult compilation most pleasingly worked out.

### W. D. BYRON'S 80TH BIRTHDAY

William D. Byron, president of W. D. Byron & Sons, Williamsport, Md., celebrated his 80th birthday at his home on the banks of the Potomac. At the birthday dinner there were 30 guests, most of whom were or had been associated with the firm of W. D. Byron & Sons and its allied companies. Some of the guests came as far as from Boston, Mass., to do honor to Mr. Byron.

The dinner speeches were much enjoyed, especially that of Mr. Byron himself, who took the boys back to the times when only hand work was in vogue in the leather industry. Mr. Byron has had a life-long experience in the business, and thousands of men have learned their trade under him.

Mr. Byron is well and hearty at the age of eighty, after 66 years of active business in Boston and in his present location. The concern of which he is the head includes his five sons and two grandsons.

### ST. LOUIS VEHICLE BUILDERS' CLUB

This club held an installation of officers on October 1, the following being installed: D. J. Keck, president; Louis Niebling, vice-president; A. E. Spaete, financial secretary; Frank Collier, corresponding secretary; Henry Uhlenhaut, treasurer, and Jacob Benner, sergeant-at-arms. The ceremony was followed by a banquet and enjoyable entertainment by special talent.

The club proposes the establishment of a circulating library on vehicle and automobile manufacturing and repairing, etc., the employment of a common counsel to handle law questions that might come up between the individual members and their customers, or others, and also the establishment of a central bureau for the listing and sale of vehicles, automobiles, machinery, tools, etc., of the various members who may have the same for sale.

The organization comprises about 75 of the leading vehicle builders of the city.

## VALUE OF ENGLISH "BURBANK" CLOTH

Up to this time a majority of slip covers used on automobiles have been made of rubber interlined cloths, which is two pieces of cloth bonded together with a rubber composition, the face or surface cloth usually being a thin, light weight cloth made in light weight so that when doubled with a heavy backing cloth the finished, combined material would be soft and flexible to conform to the various curves of the automobile cushion. In most cases slip cover cloths constructed on these lines have three great weaknesses. The thin surface cloth soon wears through to the rubber interlining; slip covers made of rubber interlined cloths cannot be cleaned with gasoline because it is the solvent of rubber and dissolves; rubber interlining slip covers made of rubber interlined cloths are subject to constant chemical action and very often rot from the action of the rubber composition interlining.

English "Burbank" seat cover cloth as exhibited by Wm. Laidlaw, Jr., New York City, at the Carriage Builders' convention, and sold by him only to the trade, is free from all of these objections because being one solid piece of cloth instead of two thin pieces cemented together, its strength is an undivided unit and is distributed throughout every shred of the cloth, and containing no rubber composition or any other chemicals. Slip covers of "Burbank" seat cover cloth can be cleaned with gasoline or any dry cleaning process without injury to the cloth, and, containing no chemicals, there is no chemical action or decomposition. The "Burbank" will last indefinitely. It is 60 inches wide and cuts to great advantage. It is the realization of an ideal, but it costs no more than the inferior rubber interlined, domestic cloths.

## DEATH OF WILLIAM H. WOOD

William H. Wood, who for a number of years has been the manager of Frank Schanz's Wagon Works, Philadelphia, died suddenly Saturday afternoon, September 21. Mr. Wood, who resided at 103 South 35th street, Camden, N. J., was on his way home in a trolley car, accompanied by members of his family, when he was suddenly taken very ill and had to be removed to a convenient drug store, where he died before a physician could reach him. The funeral took place on September 25.

The deceased was the only son of W. W. Wood, one of the publishers of *The Carriage and Wagon Builder*, Philadelphia, upon whom the bereavement falls heavily.

## NOTES ABOUT THE PARRY PERSONNEL

W. A. Rosenwald, formerly in charge of the branch office for Parry Mfg. Company at Minneapolis, has been transferred to the home office of that company, where he will occupy a position in the sales department.

Under a readjustment of territory, W. A. Blackburn will travel only eastern Ohio instead of part of Pennsylvania. J. P. Dollison will travel Pennsylvania and West Virginia.

The following salesmen have discontinued their connection with the company: Jas. H. Collins, Nebraska; E. J. Rood and J. E. Horsley for Iowa.

Walter G. Beggs, employed for several years in the office sales department, has accepted a road position to travel for the company in New York state.

Three new salesmen are W. C. Henderson for northern Oklahoma, W. L. Seaman for southern Kansas and E. C. Payne for Iowa.

## EMERSON-BRANTINGHAM SALESMEN'S CONVENTION

During the first week in October a series of salesmen's meetings was held by the Emerson-Brantingham Co., at Rockford, Ill. One hundred and twenty-five salesmen from all parts of

the United States, and some from abroad, were present. During the four days' meeting everyone was kept busy inspecting the plants and show rooms of the company and listening to the lectures given by experts on all the lines of the new Emerson-Brantingham Co.

The first day was devoted to the carriage work. The following days were spent in visiting the other plants, where wagons and farm machinery are manufactured.

Monday night the visitors were the guests of the company at a banquet at the Nelson Hotel, where Mr. Brantingham presided.

## VEHICLE ASSOCIATION MEET

Cleveland has made careful preparations for the entertainment of the National Implement and Vehicle Association, October 23-25.

The work is handled by representatives of iron, steel, varnish and other associate lines that have trade relations with the manufacturers of agricultural implements and vehicles. The following committees have been organized:

Finance Committee—W. A. Comstock, Cleveland Wire Spring Co.; L. S. Smith, National Malleable Castings Co.; W. P. Champney, Eberhard Mfg. Co.; E. M. Williams, Sherwin-Williams Co.; Charles E. Adams, Cleveland Hardware Co.; Harry B. Hare, Otis Steel Co.; F. B. Richards, M. A. Hanna Co.; J. R. Blakeslee, Ajax Mfg. Co.; R. C. Moody, Cleveland Wire Spring Co.; W. J. Glidden, Glidden Varnish Co.; G. F. Rummel, American Steel & Wire Co., Chicago; C. W. Scofield, Lake Erie Iron Co.; J. E. Williams, National Screw & Tack Co.; J. R. Scott, Carnegie Steel Co.; R. S. Hall, Bourne-Fuller Co.; John C. Chandler, Lackawanna Steel Co.; Edgar D. Rogers, Cambria Steel Co.

Ball Committee—R. P. Zint, Republic Iron & Steel Co., Chicago; Lewis B. Quinn, Sherwin-Williams Co., Chicago; H. J. Clark, Upson Nut Co.; B. E. Hamilton, Illinois Steel Co.

## SALES MANAGERS TALK

More than forty sales managers and other officials of companies in the Automobile Board of Trade attended the first day's session of the Sales Managers' Convention at the Association rooms and discussed papers. The papers included freight and shipping, by J. S. Marvin, traffic manager, National Association of Automobile Manufacturers; Selling and Advertising, by J. G. Monihan, of the Premier Motor Mfg. Co.; and Motor Car Equipment, by Geo. E. Daniels, of the Oakland Motor Car Co., and C. S. Jameson, of the Willys-Overland Co.

## TRYING TO AVOID CAR SHORTAGE

Instructions have been issued to all freight agents of the Pennsylvania Railroad to urge shippers to move traffic as early as possible, to avoid the possibility of car shortage or congestion in the fall.

In a statement it was said that the tonnage being offered for shipment at present was enormous, and it was predicted that traffic would tax the country's railroad facilities to the utmost. Shippers are being asked to assist the railroads by loading and unloading cars promptly, and by loading cars to their capacity.

## THE PHILADELPHIA ASSOCIATION MEETS

The Carriage, Wagon and Motor Vehicle Association of Philadelphia held its first monthly meeting after the summer vacation at the Hotel Hanover, September 20.

George N. Penso, Kingston, Jamaica, who was a visitor at the meeting, was requested to give some account of the condition of the vehicle industry in his country.

After adjournment the members enjoyed the usual monthly dinner in the dining room of the hotel.



## BRUSHES AND BRISTLES

There has been a decided change of fashion in paint brushes during the last few years, due no doubt to the advent of so many specialized articles of the enamel-paint type on the market, and we can see the "flat" brush outgiving the "round" and "oval" varieties, and the "black bristle" again gaining favor, where once the white bristle was preeminent. It is evident that these specialized materials require special tools for their proper manipulation, and it is just as evident that the old style of brush left much to be desired. In what way then does the "full, flat, black bristle brush," so much advocated by the manufacturers themselves, fulfill the desired conditions? First, let me see what these conditions are. It must be apparent to all users of enamels, japans, enamel paints, and even some of the ready-mixed paint, that they are more difficult to spread than either ordinary paint or varnish. The first requirement then is strength or "spring" in the bristles. Without this you cannot hope to spread the material into place, and leave it before it reaches its setting point, after which it is, of course, unworkable with any kind of brush.

The next most important point is "fineness" of bristle. Whether you are applying an undercoat or a finishing, whether it be a "flowing" or a "non-flowing" material, it is perfectly obvious that the finer the bristle the finer the result. I am convinced that a good flat black-bristle brush combines these qualities to a greater extent than white bristle brushes of any design. I say a good brush advisedly, for no one realizes more than I do the fact that a brush is not necessarily good because it is flat and has black bristles. Many of them are worse than useless, and I will try and indicate what a good specimen should be like.

The bristles should be straight, and of a silky softness. A brush which is two inches in width should be at least  $\frac{1}{2}$  an inch in thickness—and all bristles—without any center core. The bristles should be shaped to a chisel edge, and not ground on the grindstone.

One great advantage of such a brush is that it can be put straight away into enamel or varnish without the preliminary breaking in which white bristles require, and which is always more or less a source of dirt and grit getting into the stock. It is recommended that these black bristle brushes be kept in turps or turps and oil when not in use. When treated in this way, they retain their original spring, and do not get flabby as brushes do which are kept in water. Then as to a comparison between the wearing properties of black bristles and white ones, I find that in varnish and enamel a black bristle will wear as long as white, but in paint, which is more of a gritty nature, they do not wear so well. When we take into consideration, therefore, the fact that the black bristle averages some 15 per cent. cheaper than the white, we see at once that the difference is more than balanced.

I have covered, and have seen other men cover larger surfaces, single handed with a four inch flat brush, than would be possible with a pound brush, using enamel paint, and there was a greater solidity in the finish also. The flat brush is of much less weight, and the absence of binding makes it cleaner. I am convinced that those tradesmen who still retain their prejudice against the black bristles have, if they have tried it at all, got hold of a very poor sample. I would not assert that finality has been reached in the manufacture of the black bristle brush, or even go so far as to say that the ideal brush is yet on the market, but I believe that even now it has reached a stage which, for present day needs, places it above all others.—C. E. Oliver in *The Decorator*.

## NEW NOVELTY NOT ENOUGH NOWADAYS

It may surprise prospective motor car buyers to learn that novelties of design and construction are not considered as inducements to the purchase of one make or another half as much as time tried features, writes the advertising man of the

Stevens-Duryea organization. As one man puts it: The cars that have made good have done so because their designers got down to bed rock at the start. They studied and experimented until they hit the right mechanical principles, and then they stuck to them.

"New things may be talking points and a clever salesman can often get away with them, but its the good old reliable things that do their duty without constant tinkering that make satisfied motorists.

"Take the clutch as an example. Its apparently a small thing—just one of the 'innards' that is out of sight and should be out of mind as well. On a good car it is, but language fails to convey an appreciation of the troubles to which a poor clutch can give rise.

"There are mighty few cars on the market today that have been built with the same type of clutch for eight years. But such is the case with the Stevens-Duryea. It's a multiple-disc, dry-plate clutch, originated by J. Frank Duryea in 1904, and its absolute reliability and smooth action have been an important factor in the success of the Stevens-Duryea since then.

"The only change made in it since 1904 is in the friction facing. First it was leather; then cork inserts in 1907, and when the asbestos-wire fabric was invented this was adopted. This makes it practically indestructible.

"If you want to realize how important this Stevens-Duryea is look around and see how many different clutches are used, and likewise how many have adopted the Stevens-Duryea principle in the last few years."

## PERSONAL

John K. Hipple, for a number of years in charge of the Philadelphia branch house of the Cortland (N. Y.) Wagon Co., and covering the states of New Jersey, Delaware, Maryland and eastern Pennsylvania, has gone with the Geneva (N. Y.) Wagon Co. as traveling representative.

## THE WALKER-WEISS AXLE CO. ORGANIZES

The Flint Axle Works, the first factory to locate in the north end of the city 12 years ago, was sold September 24 by the Durant-Dort interests to Fred J. Weiss, W. Thomas Walker and Charles H. Bonbright, who have formed a co-partnership under the name of the Walker-Weiss Axle Company. The new company will manufacture automobile axles and hubs and will treble the working force.

## ELECTRICAL SHOW

The New York Electrical Exhibition and Automobile Show, held in New York's Grand Central Palace, October 9 to 19, devoted a large amount of space to the electric motor vehicle. The third floor was converted into the semblance of an automobile track. Ten times around the track constitutes a mile. All types of electric pleasure vehicles and the lighter commercial trucks were demonstrated on this floor.

## BROCKWAY MOTOR TRUCK CO.

The Brockway Motor Truck Co., Cortland, N. Y., has been incorporated with a capital of \$100,000, for the purpose of manufacturing a line of popular priced but high grade commercial trucks, of which three models will be made, ranging from 1,000 to 4,000 pounds capacity.

## MEYER'S THREADS

Very high grade sewing silk and spool threads are made for the vehicle industry by John C. Meyer & Co., Lowell, Mass. Their worth is now so widely appreciated that it is difficult to sell other kinds to those who have tried the Meyer threads.

# Trade News From Near and Far

## BUSINESS CHANGES

E. J. Martin has purchased the business of Samuel Lew & Co., in Harper, Kas.

Howard Lyon has purchased the stock of vehicles, etc., of F. F. Poll, in Witten, Ia.

J. T. Stangle has purchased the stock of buggies, etc., of Nagel Bros., in Dedham, Ia.

Fitzgerald & McKown have purchased the Peterson stock of vehicles, etc., in Superior, Neb.

E. C. Laubengayer has been succeeded in business at Brookville, Kas., by Laubengayer Bros.

Little & Hasstedt have succeeded to the business of the Hanson-Hasstedt Co., in Boone, Ia.

R. C. Stone has disposed of his vehicle and implement business in Hesston, Kas., to Ara Steel.

N. J. Teller has purchased the buggy and implement business of F. M. Thompson, in Edgar, Neb.

Dan Luginbill has purchased the stock of vehicles, etc., of W. T. Stevenson, in Greensburg, Kas.

Mr. Ash has succeeded to the buggy and implement business of Ash & Foulke, in Wellington, Kas.

Chas. Gutchess has purchased the stock of vehicles, etc., of O. M. McLaughlin, in Nashville, Mich.

Chas. Lawrence has purchased the stock of vehicles and hardware of Henry Buck, in Plymouth, Ind.

J. W. Bullock has purchased the stock of vehicles, etc., of J. E. Slote & Co., in Three Rivers, Mich.

Howard M. Cleney has purchased the stock of vehicles of Johnson & Nelson, in Newman Grove, Neb.

H. G. Robertson, of Hutchinson, has purchased the stock of buggies, etc., of Hartman Bros., in Preston, Kas.

W. A. Rossman has purchased the carriage and implement business of Fred C. McNitt, in Washington, Kas.

Borland Bros. have disposed of their stock of vehicles and implements in Washington, Pa., to Parker & Gamble.

A. W. Stillinger has purchased the vehicle and implement business of Kinyon & Stratton, in St. Edwards, Neb.

Herman Rehberg has disposed of his stock of carriages and implements in Bennington, Kas., to Patterson & Crow.

P. O. Peterson has succeeded to the buggy and implement business of Peterson & Peterson, in Lake Wilson, Minn.

The McMinnville Mfg. Co. has been incorporated in McMinnville, Tenn., with a capital of \$20,000, to make wagons, etc.

At Kansas City, Kas., John W. Morgan sold a half interest in his wagon factory to W. D. Gates. A planing mill will be conducted in connection.

An amendment was made to the charter of the Denton-Wilson Buggy Co., Shelby, Tennessee, changing its name to the Raymond-Wilson Buggy Co.

The implement and wagon establishment of O. E. Beatty at Lewistown, Mont., has been purchased by the Judith Hardware Company, which will continue the business with Mr. Beatty in charge as manager.

## NEW FIRMS AND INCORPORATIONS

The Detroit (Mich.) Motor Chassis Co. has been incorporated; capital, \$25,000.

J. W. Taylor has opened a new stock of vehicles and implements in Mason City, Neb.

Herring & Young have just opened a vehicle and implement business in Herring, Okla.

Holley Nelson, who was with the American Carriage Co.,

of Cincinnati, Ohio, has gone to Aurora, Ind., and organized the American Cart Co. They will make carts only and expect to turn out 500 this year.

The Ellis Carriage Co. has been incorporated in Kingston, N. C., with a capital stock of \$100,000.

The Allendale Buggy & Wagon Co. has been incorporated in Allendale, S. C., with a capital stock of \$6,000.

Friesen & Co. have opened a buggy and implement house in Gladstone, Neb., under the management of Ed. Junker.

W. Wolfe has disposed of his interest in the buggy and implement firm of Wolfe & Whittaker, in Red Cloud, Neb.

A. W. Peterson, of Litchfield, Minn., and others, are about to open a stock of vehicles and implements in Conrad, Mont.

Ed. A. Ayers, of Fairbury, Neb., has opened a branch house in Alexandria, which will be in charge of his son, Fred A. Ayers.

Beattie Motor & Wagon Mfg. Co., Seattle, Wash., has been incorporated with a capital of \$20,000, by W. J. Beattie, C. W. Burdick.

The Otwell (Ind.) Wagon & Novelty Works has been incorporated with a capital of \$4,000, by R. M. Craig, R. P. Stoker, Andy Dillon, J. P. Craig, J. C. Chaille.

The Henderson (N. C.) Buggy & Wagon Co. has been incorporated by W. A. and O. R. Keith, G. W. Leutz and S. J. Thomas, to deal in vehicles and harness.

## IMPROVEMENTS AND EXTENSIONS

The Fairbury (Ill.) Carriage Co. is enlarging its building.

The Hardy Buggy Co., of Paducah, Ky., contemplates building a factory in Waco, Tex.

Wetter Bros. have begun the erection of a vehicle and implement warehouse in Rinard, Ia.

M. B. Smemoe, of Baltic, S. D., is erecting a vehicle repository 24x60 feet, and two stories high.

R. W. Norris & Sons are about to build an addition to their carriage and wagon works in Baltimore, Md.

The Rex Buggy Co., of Connersville, Ind., will open an additional plant to manufacture automobiles.

The Hackney Wagon Co., of Wilson, N. C., making farm wagons, is making improvement to plant and capacity.

Joseph N. Smith, of Detroit, Mich., has gone out of manufacturing carriage rails and will in the future make automobile trimmings.

The Michigan Buggy Co., of Kalamazoo, will immediately begin the construction of a \$1,000,000 branch automobile plant in San Francisco.

Masur Brothers have completed an immense buggy warehouse at Lockhart, Texas., and have it now fully stocked with implements and vehicles.

A four story reinforced concrete structure, to cost \$40,000, is being built at 1934 Arch street, Philadelphia, Pa., for the Gregg Carriage Company.

A two story frame addition to the carriage shop at 404a Massachusetts avenue, Arlington, Mass., is to be erected for E. F. Deering. It will be 19x65 feet in area and cost about \$6,000.

Work on the reconstruction of the Fremont (Neb.) Carriage Factory is in progress. The building has all been closed in and work will soon be commenced on the interior. New machinery is being installed.

Hackney Bros., of Wilson, N. C., have bought fifty acres of land just outside this town and will build a large factory, 150 x 700 feet in size, four stories in height, and the output will

probably be doubled. The factory in use now at Wilson will be abandoned.

The Fred L. Seibert Wagon Manufacturing Co., Toledo, O., has begun the foundation for a new factory on the south side of Southard avenue, between Eleventh and Twelfth streets. The building is to be three stories.

The Golden Eagle Carriage Co., of Atlanta, Ga., has purchased the plant of the Atlanta Buggy Co., which firm failed, and made improvements costing considerable money. The plant is now much larger. Dr. Foster is president.

An addition to their carriage and wagon works has been planned for R. W. Norris & Son, at Baltimore, Md. The structure is to be two stories high and its dimensions will be 15.6x45.9. Work on it will be begun immediately.

The contract for a road repair and testing building for the Velie Motor Vehicle Co. has been made. The building will be erected between the carriage and motor factory and its dimensions will be 80x200 feet. It will be of brick construction and will cost approximately \$15,000.

The Griffin (Ga.) Buggy Co. has incorporated with a capital of \$50,000, and a brick factory is being built 70x300 feet in size. Capacity, 3,000 jobs a year. They will make a popular priced buggy and surrey. Joe Evans is at the head of this company and John Ward is secretary and treasurer.

F. O. Ames Co., Owensboro, Ky., wholesale buggies, has been making automobiles in a small way, but is now building a new factory to turn out 500 automobiles this year. J. T. Sandwich, the buyer, and Gale B. Smith, secretary and treasurer, are some of the leading spirits in this enterprise.

The Wright Carriage Body Co., of Moline, Ill., in the last two months has spent \$15,000 in improvements. A third story has been added to the east part of the plant, which was two stories; and a third story has been added to the L, dimensions of this floor being 50x60 feet. These additions give the company 12,000 square feet additional floor space and made necessary the purchase of new equipment which already has been installed. The company will operate with a force of from 150 to 160 all winter, and has enough business in sight to keep busy for the next six months.

## FIRES

The stock of buggies, etc., of B. A. Ling, in Spring Grove, Pa., has been destroyed by fire.

The large storage building of the Hitchcock Wagon Company at Cortland, N. Y., was burned August 15. The loss is estimated between \$5,000 and \$10,000.

The Stewart Vehicle Works, of Martinsburg, W. Va., employing 400 men, was completely destroyed by fire September 16, entailing a loss of more than \$150,000.

The large warehouses belonging to Schollfield & Nix, at Sunset, Tex., stored with buggies and implements, burned September 22. Loss about \$3,000, insurance \$2,200.

## MINERAL WASTE

In the preface to Bulletin 47, written by Charles L. Parsons, chief mineral chemist of the Bureau of Mines, Director Holmes gives his views upon what he terms real or true conservation.

Dr. Holmes says: "During the past year, in producing 500,000,000 tons of coal we wasted or left underground, in such condition that it probably will not be recovered in the future, 250,000,000 tons of coal; we turned loose into the atmosphere a quantity of natural gas larger than the total output of artificial gas during the same period in all the towns and cities of the United States; we also wasted or lost in the mining, preparation, and treatment of other important minerals from 10 to 15 per cent. of the year's production. These losses serve to indicate the importance of inquiries and investigations by the Federal Government for the purpose of lessening the waste of essential resources.

## TRI-STATE VEHICLE AND IMPLEMENT SHOW. MUSIC HALL, CINCINNATI, O., OCT. 14-19

List of exhibitors—Ahlbrand Carriage Co., Seymour, Ind.; American Carriage Co., Cincinnati, O.; American Seeding-Machine Co., Springfield, O.; American Wagon Co., Dixon, Ill.; F. A. Ames Co., Owensboro, Ky.; Anchor Buggy Co., Cincinnati, O.; H. H. Babcock Co., Watertown, N. Y.; S. E. Baily Co., Lancaster, Pa.; Banner Buggy Co., St. Louis, Mo.; Bay State Whip Co., Westfield, Mass.; Bimel Buggy Co., Sidney, O.; Brookshire & Robinson Co., St. Paris, O.; Brown Carriage Co., Cincinnati, O.; Brown Mfg. Co., Zanesville, O.; Buob & Scheu, Cincinnati, O.; Colonial Carriage Co., Circleville, O.; Columbus Buggy Co., Columbus, O.; Continental Carriage Co., Cincinnati, O.; The Columbia Carriage Co., Fostoria, O.; Cortland Cart & Carriage Co., Sidney, N. Y.; Wm. Cron Sons Co., Celina, O.; Crouch Bros. Mfg. Co., Cincinnati, O.; J. W. Curry & Co., Cincinnati, O.; John Deere Plow Co., Indianapolis, Ind.; Durant-Dort Carriage Co., Flint, Mich.; The Deal Buggy Co., Jonesville, Mich.; Eagle Carriage Co., Cincinnati, O.; Eckhart Carriage Co., Auburn, Ind.; Emerson-Brantingham Co., Indianapolis, Ind.; Enterprise Carriage Mfg. Co., Miamisburg, O.; Fitzgerald Saddlery Co., Maysville, Ky.; Frost Wire Fence Co., Cleveland, O.; Gerstenslager Co., Wooster, O.; Graf-Morsbach Co., Cincinnati, O.; T. T. Haydock Carriage Co., Cincinnati, O.; Hickory Carriage Co., Cincinnati, O.; Holcker Buggy Co., Crestline, O.; Houghton Sulky Co., Marion, O.; Imperial Automobile Co., Jackson, Mich.; Independent Whip Co., Westfield, Mass.; Indianapolis Saddlery Co., Indianapolis, Ind.; Indianapolis Tent & Awning Co., Indianapolis, Ind.; International Harvester Co., Cincinnati, O.; Jewel Carriage Co., Cincinnati, O.; Kentucky Wagon Co., Louisville, Ky.; Roderick Lean Mfg. Co., Mansfield, O.; Lion Buggy Co., Cincinnati, O.; Long & Alstatter Co., Hamilton, O.; Martin Carriage Works, York, Pa.; Michigan Buggy Co., Kalamazoo, Mich.; John Miller Saddlery Co., Louisville, Ky.; Morris & Co., Chicago, Ill.; New Idea Spreader Co., Coldwater, O.; Oliver Chilled Plow Co., South Bend, Ind.; Ohio Cultivator Co., Bellevue, O.; Owensboro Buggy Co., Owensboro, Ky.; Owensboro Wagon Co., Owensboro, Ky.; Parry Mfg. Co., Indianapolis, Ind.; Peters Buggy Co., Columbus, O.; Phoenix Carriage Co., Cincinnati, O.; Pilot Motor Car Co., Richmond, Ind.; Poste Bros. Buggy Co., Columbus, O.; Queen City Carriage Co., Cincinnati, O.; Regal Buggy Co., St. Louis, Mo.; Sayers & Scoville Co., Cincinnati, O.; Schafer Saddlery Co., Decatur, Ind.; Sechler & Co., Cincinnati, O.; Seidel Buggy Co., Richmond, Ind.; J. H. & F. A. Sells Co., Columbus, O.; Star Storm Front Co., Troy, O.; Staver Carriage Co., Chicago, Ill.; Studebaker Corporation, South Bend, Ind.; The Standard Cart Co., Aurora, Ind.; Thornhill Wagon Co., Lynchburg, Va.; Troy Wagon Works Co., Troy, O.; Union City Carriage Mfg. Co., Union City, Ind.; Van Duzen & Roys Co., Columbus, O.; Vehicle Apron & Hood Co., Columbus, O.; Velvet Lawn Seeder Co., Springfield, O.; York Carriage Co., York, Pa.

## THE BRYANT BUGGY REACH

This reach is of steel and most ingeniously fashioned and formed to stand about any twisting strain likely, and return to shape at once. It is attractive in price as compared to second-growth hickory ironed for use as a reach.

There are so many good points we think it should be left to the buggy builder to find them out by experiment and experience as some have already done. Mr. Bryant is no theorist. His long experience with a big concern in the trade is approval enough.

The Rochester Pressed Steel Co., Rochester, N. Y., is the sole maker and distributor, and it deserves recognition which it should have in view of the importance of the invention.

## OBITUARY

**Hilare Duhamel**, long identified with the vehicle industry in Brooklyn, N. Y., died September 29, after a long illness at Lakewood, N. J., where he had gone seeking a renewal of strength. About four years ago Mr. Duhamel underwent a surgical operation, and since then his health had been very poor. The immediate cause of his death was uremic poisoning. Mr. Duhamel was a self-made man. He was born in Baudrell, near Montreal, Canada, September 23, seventy-one years ago, and there learned the trade of carriage and wagon maker. He went from there to Troy, then to New York and finally forty-six years ago moved to Williamsburgh, where he soon started in business for himself, making wagons and carriages at an establishment on Wallabout street, which is now an automobile factory conducted under the firm name of H. Duhamel & Sons. Mr. Duhamel was a member of the Vehicle Manufacturers' Association of New York. He is survived by a daughter, five sons, Nazaire, Amair and Louis, his business partners; Adolphe, who is a carriage manufacturer of Brooklyn, and Joseph, who is chief auditor for the firm of Abraham & Straus. Also he leaves twelve grandchildren.

**George Mathes**, 71, wagon manufacturer for the last 46 years at Anderson, Ind., died August 10. He was stricken with paralysis. He is survived by a daughter and son.

**Louis McCall**, 71, retired carriage manufacturer and former resident of St. Louis for 40 years, who died August 1 at Oakland, Cal., of pneumonia, was the founder and former president of the McCall & Hart Carriage Company, from which he retired eight years ago. He had since spent much of his time in travel. He was a native of Lancaster, Ohio, and moved to St. Louis more than 40 years ago. His wife survives.

**James R. Parcher**, 59, at one time in the carriage trade in Whitefield, N. H., died September 14 of Bright's disease.

**Charles Henry Cadieu**, 75, once a carriage builder at Amesbury, Mass., died at Dorchester, Mass., on September 31. In early life he followed the sea. He served with distinction in the civil war as an officer of the navy, resigning after the war, with the rank of lieutenant commander, to engage in the carriage manufacturing business in Amesbury. During later years he had been engaged in business in Chardon street, Boston.

**James J. Keating**, 77, for many years in the blacksmithing and wagon business at Indianapolis, died October 5. His widow and one son survive.

**Jacob Bischoff**, 84, died October 2, at his home in St. Louis, Mo. He had been a resident of St. Louis since 1843, being engaged in the wagon and carriage business. He was a member of the G. A. R. Bischoff was born in Germany, coming to this country when 14 years old. Immediately after arriving in America he settled in St. Louis, Bischoff was among the first in St. Louis to enlist in the Federal Army in the civil war. He is survived by five children and fifteen grandchildren.

**John Colyer**, head of the firm of J. Colyer & Co., carriage builders, died October 6 at his home in Newark, N. J. Mr. Colyer had been ill for about ten days. He was a lifelong resident of Newark. Death was due to heart disease and rheumatism, superinduced by the infirmities of old age. When 20 years of age Mr. Colyer entered the carriage establishment of his father and since continued in that line of business to his death. He was vice-president of the Carriage Builders' National Association of the United States. He is survived by his wife and two sons.

**Michael Saalwachter**, 41, engaged in blacksmithing and carriage manufacturing at Rochester, N. Y., died October 5. He was born in Rochester. His wife survives.

## MAKING THE CAR NEATER

The preponderance of bright metal parts have for some time been recognized at their true worth, and they have been a rapidly-disappearing quantity, the discontinuance of the use of brass and nickel plated parts having been the slowest part of the reform, mainly because manufacturers have themselves been slow to realize how objectionable is this excessive bright work.

Certainly some little relief seems necessary if a car be painted black or dark blue, in order to remove the funereal sombreness that would otherwise be presented, the extent to which it is employed, and the manner of employing it being purely a question of taste and judgment, just as it is in every other walk of life. But, when makers go to the extreme and introduce brass or nickel plate all over the bonnet, on the edges of the dashboard and running footboards, on the gear and brake lever quadrants, on the Cape cart hood arms, and elsewhere, the result is so garish that the purchaser who possesses some degree of taste must set to work to sober down the general effect by a careful and judicious use of the paintpot and brush.

We once had all the Cape cart hood fittings, lamp brackets, bonnet and other bright parts removed from a car, and either painted and lined to match the coachwork or stove enameled, whichever was best suited to the part, and the improvement in the car, when refitted, was marked, says G. H., in *The Motor*.

The adoption of greys in the painting of motor cars has had a beneficial effect, as nothing tones so well with grey as a dark color, such as dark blue, or, best of all, black, and so, with grey, bright metal work has to be reduced to the minimum.

The revulsion of feeling against the untidy effect produced by bright work and by polished accessories has resulted in the painting of the bodies of lamps and the concealment of such details as can be concealed.

Combinations of accessories are often advantageous. The clock and speedometer combinations are excellent, and there seems no reason why a box that carried the acetylene gas generator in one part and the horn in another should not be tried.

The inclusion of lamps in the body work is not quite possible, as the lights demanded by the law must be placed at the extreme width of the vehicle, so that the side lamps devoted to compliance with the law must be carried on projecting brackets. If they be carried so as to project through the scuttle dash the head lamps must be so placed as to comply with the law, being then carried practically over the mud guards, and this is not a good arrangement. The Austin method of carrying the horn under the scuttle is a good example of the effort to secure neatness without affecting efficiency.

## Wants

Help and situation wanted advertisements, one cent a word; all other advertisements in this department, 5 cents a word; Initials and figures count as words. Minimum price, 30 cents for each advertisement.

### PATENTS.

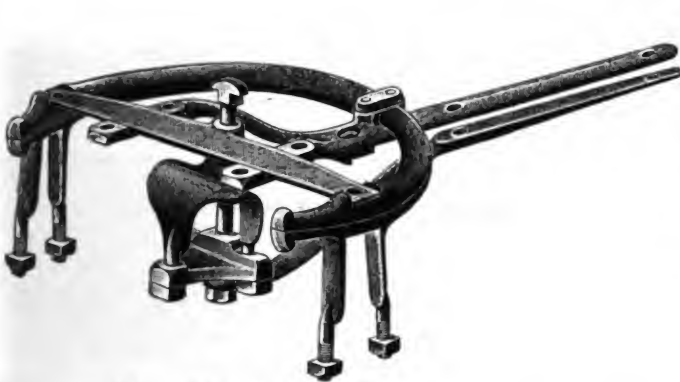
**Patents**—H. W. T. Jenner, patent attorney and mechanical expert, 608 F St., Washington, D. C. Established 1883. I make a free examination and report if a patent can be had and exactly what it will cost. Send for circular.

### SITUATIONS WANTED

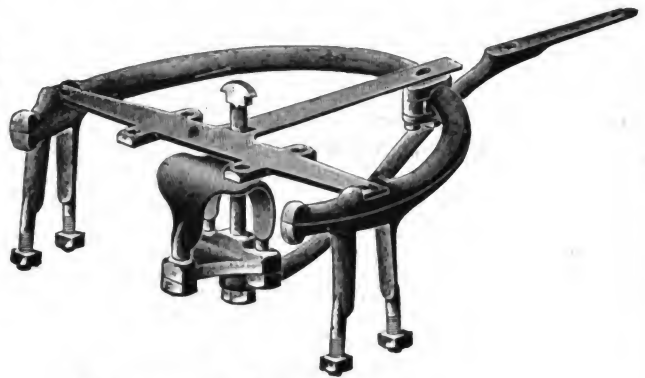
**Wanted**—By a man with practical experience as body designer, superintendent and salesman, position with body concern as superintendent; east preferred. Address "Practical," care The Hub.

**Automobiles**—Experienced wheel maker in all branches, can take charge of department, also tend machinery and repairs. Prefer job in the vicinity of New York. Box 30, care The Hub, 24 Murray street, New York.

# HEADQUARTERS FOR SPECIAL FINE GEAR IRONS [Dropped Forged] CARRIAGE HARDWARE



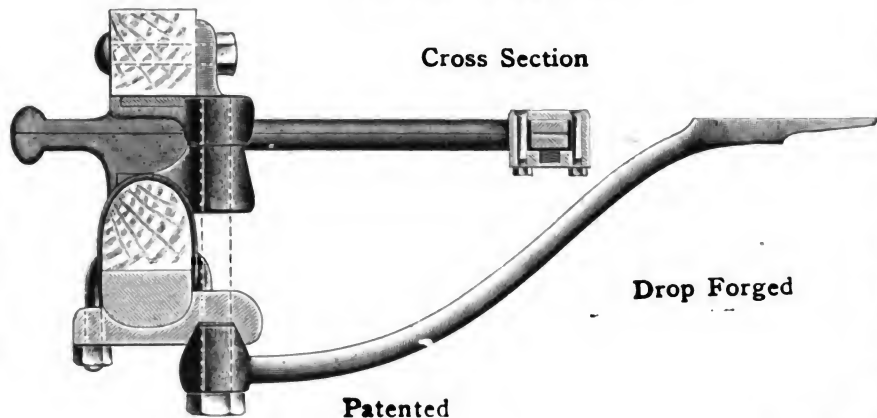
No. 1908—Gear Iron



No. 2000—Gear Iron

## WILCOX'S Mechanical 3 Prong King Bolt

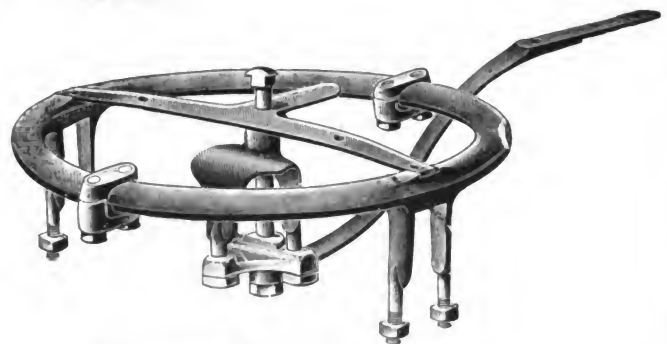
Double Locked in Head Block  
Plate and King Bolt Yoke. No  
Strain on Bolt. No Turn on  
Nut. Guaranteed.



SURE  
SAFE



No. 1905—Gear Iron



No. 1909—Concord.

Forget your trouble and decide at once to use WILCOX DROP  
FORGED IRONS. Write us for pleasure

# The D. Wilcox Mfg. Co. Mechanicsburg Pa.



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## All Steel Piano Box Buggy Bodies One Piece Steel Seats

No More  
Checks,  
Splits,  
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Breaks



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Write for our illus-  
trated catalog show-  
ing a number of our  
other seats.

Furnished to most any width desired.

### Keystone Sheet Metal Co.

Factory, Economy, Pa.

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## THE FAIRFIELD RUBBER COMPANY

Manufacturers of

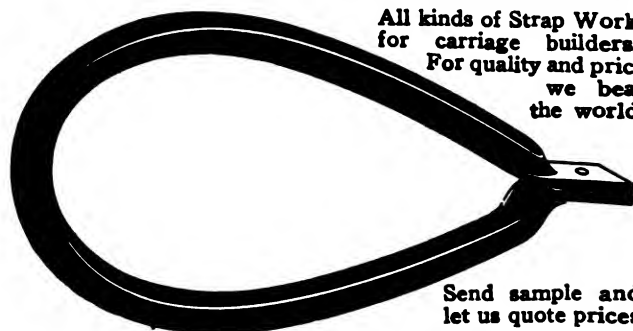
Carriage Cloth, Imitation Leather,  
Automobile Cloths, etc.

FAIRFIELD,

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## AUTOMOBILE, CARRIAGE and HARNESS SPECIALTIES

All kinds of Strap Work  
for carriage builders.  
For quality and price  
we beat  
the world.



Send sample and  
let us quote prices

J. C. DECKER

Montgomery Pa.

# Our Carload Proposition Will Increase Your Profits

A substantial saving in freight.

Less time on the road.

A small quantity of each item.

Less stock to pay interest on.

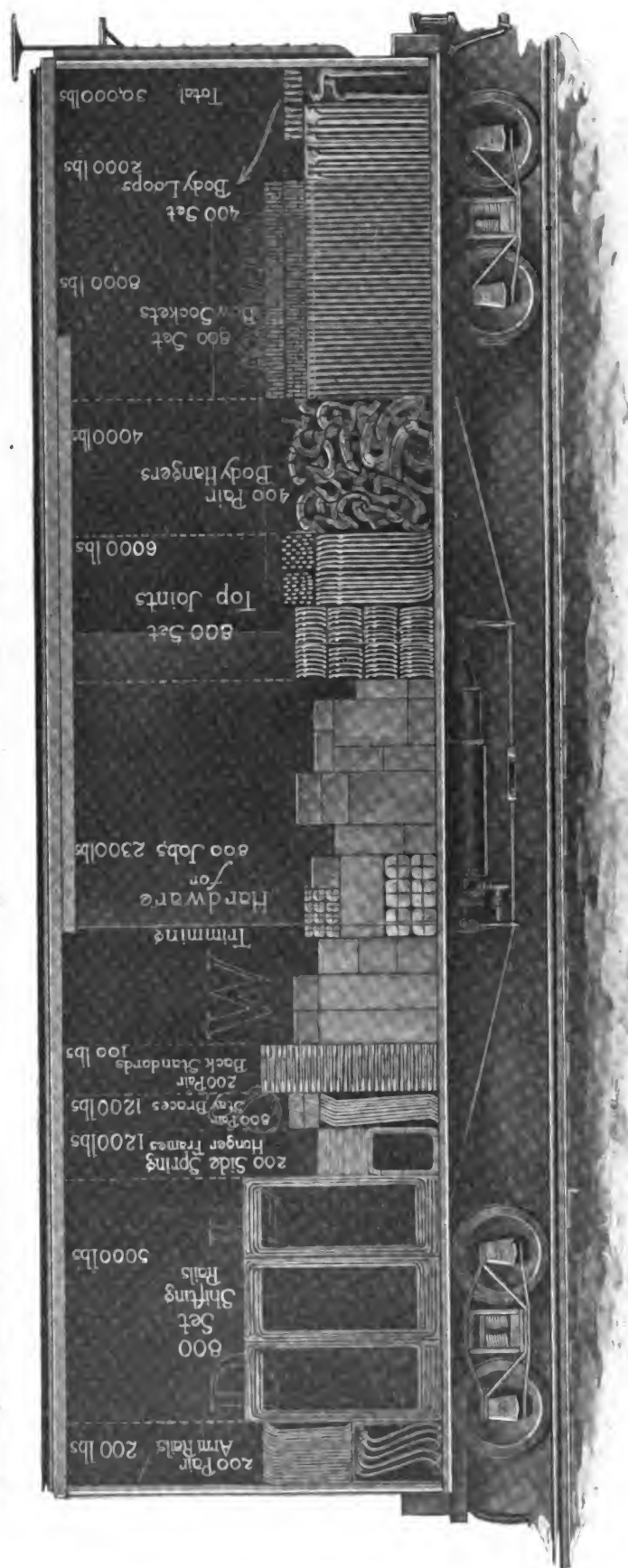
Your stock room will be ready for the rush.

Every item guaranteed, always highest quality.

No lost shipments.

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Less stock to insure.



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**Cortland Carriage Goods Co., Cortland, N. Y., U. S. A.**

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THAT'S what you want, friend DEALER, and that's good news involved in the handling of

## THE RACINE AUTO TIRE

We'll tell you why!

BECAUSE, your customer will not be worried by seeking to avoid the many sharp things that puncture other tires, for they won't puncture THE RACINE as it takes a pressure of over 4,000 pounds to puncture the chrome tanned leather outside jacket.

BECAUSE, your customer will find it unnecessary to carry that extra tire; four good revolving tires (RACINE AUTO TIRES) being all he will need.

## High Grade Motor Truck SPRINGS



THE PERFECTION SPRING CO.  
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## Jones Wheels BEST ON EARTH

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## The WEST Hydraulic Tire Setter WILL CUT DOWN EXPENSE



Tires set cold in one minute. This machine saves time—does the work better and quicker, does away with burned streaks. Only necessary to measure one wheel in a lot. Does not char the rim, and thus make the tire loosen prematurely.

Saves resandpapering of wheels. This machine is now increasing the profits of many manufacturers. Send for catalog and read about it.

ST TIRE SETTER CO.,

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MANUFACTURERS OF  
HIGH GRADE

CARRIAGE AND AUTOMOBILE  
**FORGINGS**

AND DROP FORGED WRENCHES

# CUSTOMER·A·SATISFIED·CUSTOMER

BECAUSE, those cup-like studs that you see in our illustration will grip the ground just where, and just when, the ground needs gripping; so that he is free from the danger of skidding and slipping.

BECAUSE, his tire EXPENSE account will show a difference such as will cause him to talk enthusiastically to others about you and the RACINE AUTO TIRE.

All this counts for good business; so get busy. The RACINE AUTO TIRE is going into the hands of live, pushing dealers. We shall make it equally advantageous to them as to us. Be amongst the live ones. Take our proposition. Do it now; and together let us do it thoroughly.

## RACINE AUTO TIRE COMPANY

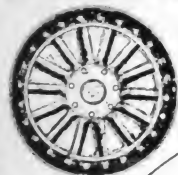
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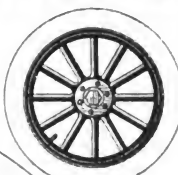


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Sarven, Warner, Kenny  
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— THAT DON'T CRACK —

That can't be distinguished from machine buffed hide.

That wears as well as expensive leather but costs much less.

Leather with these advantages is **Diefenthaler's** soft and pliable hides, and we guarantee that no oil will come out.

Made specially for carriage and automobile trimmings.

We will send sample hide for your approval without charge.

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**NEWARK, - - NEW JERSEY**

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Keystone Sheet Metal Co., Ambridge, Pa.  
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Brown, S. N. & Co., Dayton, O.  
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Millikan, G. W., Muncie, Ind.

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White, H. F., Cincinnati, O.

## BUCKRAMS, BURLAPS

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## BUGGIES

Parry Mfg. Co., Indianapolis, Ind.  
Hopp Carriage Co., Mifflinburg, Pa.

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Crandal, Stone & Co., Binghamton, N. Y.  
Eccles Co., Richard, Auburn, N. Y.  
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Gerhab, Jacob, Philadelphia, Pa.  
Gifford & Son, John A., New York City.  
Landers Bros. Co., Toledo, O.  
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Dowler, Chas. L., Philadelphia, Pa.

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Burling, W. G. (Metal), Philadelphia, Pa.  
Douglas & Lomason Co., Detroit, Mich.  
Indianapolis Dash Co., Indianapolis, Ind.  
McKinnon Dash Co., Buffalo, N. Y.

## FIFTH WHEELS

American Roller Bearing Fifth Wheel Co., Brooklyn, N. Y.  
Eccles Co., Richard, Auburn, N. Y.  
Wilcox Mfg. Co., D., Mechanicsburg, Pa.

## LEATHER, PATENT AND ENAMELED

Diefenthaler, J. V., Newark, N. J.  
Smith, L. M., & Son, Newark, N. J.  
Smyth, Chas., Co., Newark, N. J.  
Straus, M., & Sons, Newark, N. J.

## LEATHER SPECIALTIES

Decker, J. C., Montgomery, Pa.

## LINSEED OIL

Sherwin-Williams Co., Cleveland, O.

## MACHINERY AND TOOLS

Buser-Poston Tufting Mach. Co., Chillicothe, Ohio.  
Lourie Mfg. Co., Springfield, Ill.  
Novelty Tufting Machine Co., Detroit, Mich.  
Pettingell Machine Co., Amesbury, Mass.  
Porter, H. K., Everett, Mass.  
West Tire Setter Co., Rochester, N. Y.

## MACHINERY (Woodworking)

Bentel & Morgedant Co., Hamilton, O.  
Pettingell Machine Co., Amesbury, Mass.

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Racine Auto Tire Co., Racine, Wis.  
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Kelly-Springfield Co., New York City.

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Ohio Seat Co., Cincinnati, O.

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Eccles Co., Richard, Auburn, N. Y.

## SHAFT ENDS

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## SHAFT STRAPS

Decker, J. C., Montgomery, Pa.

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Murray, Wm. A., Spring Co., Cincinnati, O.  
National Spring & Wire Co., Albion, Mich.

## SPRINGS, GEARS, ETC.

Keystone Spring Works, Philadelphia, Pa.  
Lewis Spring & Axle Co., Jackson, Mich.  
Perfection Spring Co., Cleveland, O.

## TRANSFER ORNAMENTS

Palm, Fechteler & Co., New York City.

## THREADS

Meyer & Co., John C., Lowell, Mass.

## TRIMMING MATERIAL

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Landers Bros. Co., Toledo, O.  
Standard Oil Cloth Co., New York City.

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Buffalo T. & T. Co., Buffalo, N. Y.

## VARNISHES, PAINTS AND JAPANS

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Keystone Paint & Filler Co., Muncie, Pa.  
Masury, J. W. & Son, New York and Chicago  
Murphy Varnish Co., Newark, N. J.  
U. S. Varnish Co., Cincinnati, O.  
Valentine Varnish Co., New York City.

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Crane & MacMahon, New York City.  
Eberly & Orris, Mechanicsburg, Pa.  
Gifford, John A., & Son, New York City.  
Hoopes Bros. & Darlington, West Chester, Pa.  
Jones, Phineas, & Co., Newark, N. J.  
Rochester Wheel Co., Brockport, N. Y.  
Schwarz Wheel Co., Frankford, Phila., Pa.  
Shortsville Wheel Co., Shortsville, N. Y.  
Standard Wheel Co., Terre Haute, Ind.  
Stinson, Edw. W., & Co., Baltimore, Md.

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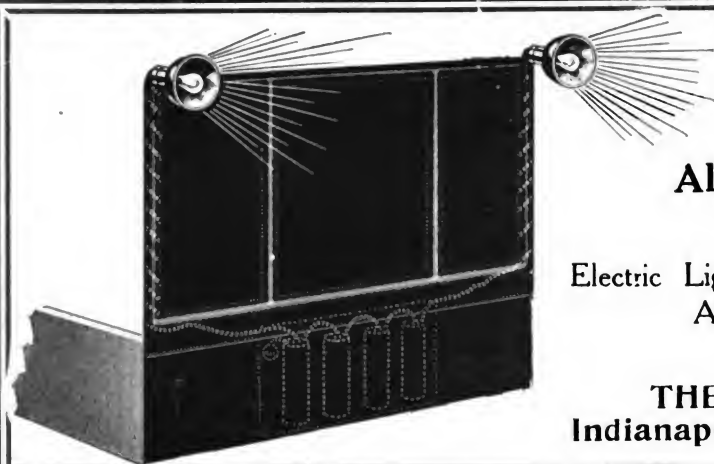
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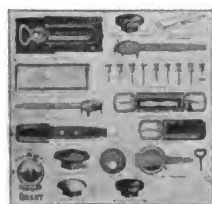
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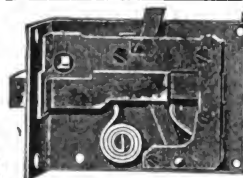


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A Sure-Sticking Dry Paste That  
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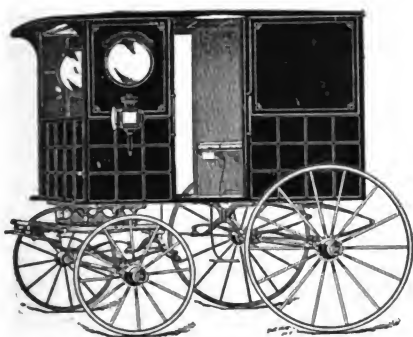
If you only realized the inestimable value  
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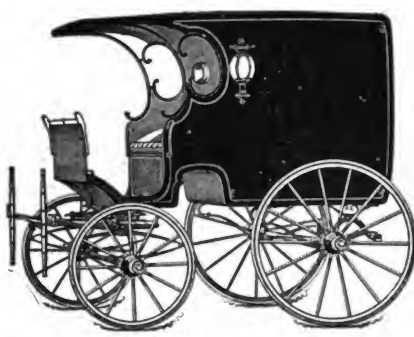
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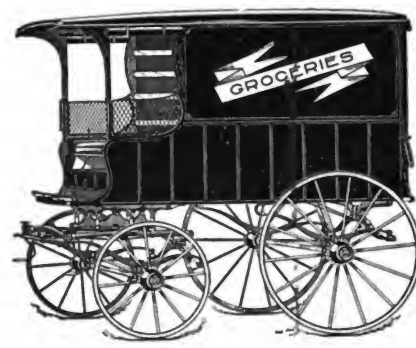
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**American Roller Bearing Fifth Wheel Co.**  
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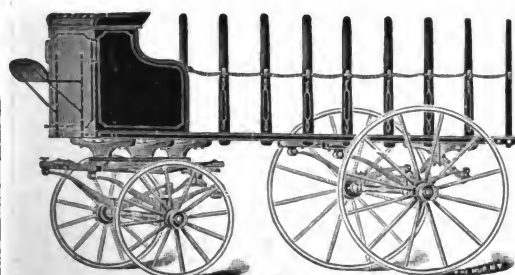
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No. 111.—Altman Wagon.



No. 113.—Grocery Wagon.



No. 122.—Flour Truck.

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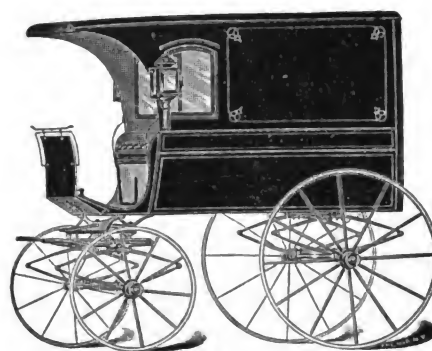
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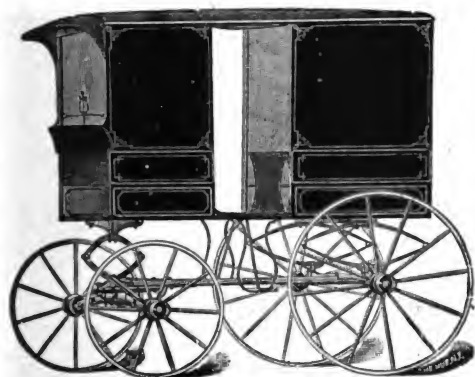
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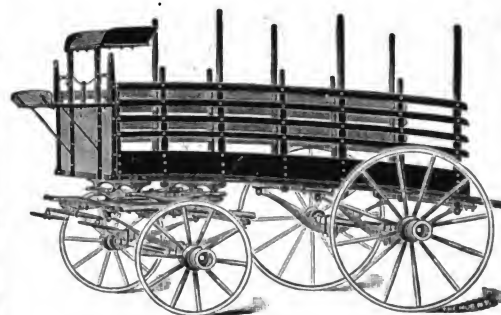
**Trade News  
Publishing Co.**  
24-26 MURRAY ST.  
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No. 115.—Delivery Wagon.



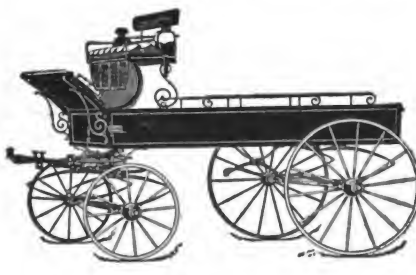
No. 116.—Milk Wagon.



No. 117.—Merchandise Truck.



No. 114.—Delivery Wagon.



No. 124.—Delivery Wagon.



No. 118.—Ambulance.



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KELLY-SPRINGFIELD  
TIRES THAT THEY ARE THE  
ONLY SAFE GUIDE  
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KELLY-SPRINGFIELD  
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*THEY HAVE STOOD THE TEST  
OF TIME AND "HAVE MADE GOOD"*

CURLEY

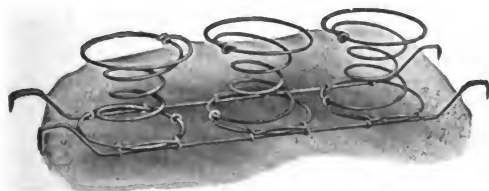
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Manufactured Only by the  
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**SPRING or SOFT EDGE CUSHION FRAME**  
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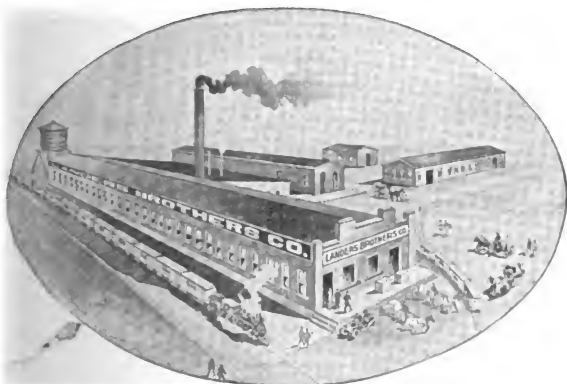
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Burlap, Transparent Celluloid,  
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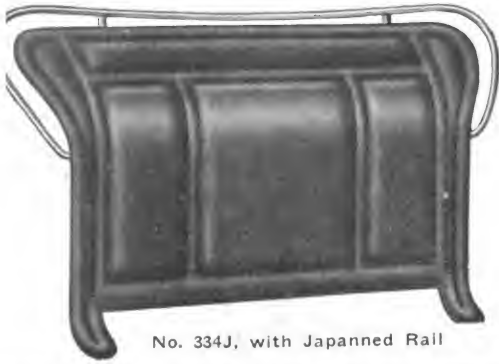
TROY, OHIO  
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ST. CATHARINES,  
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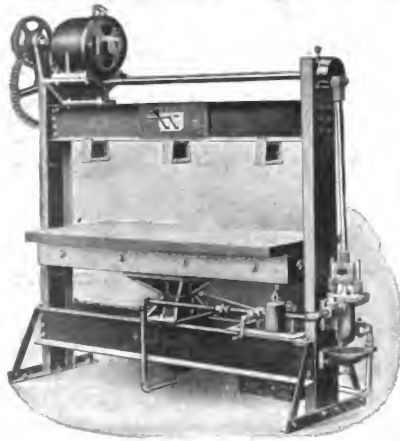
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On account of their attractive appearance  
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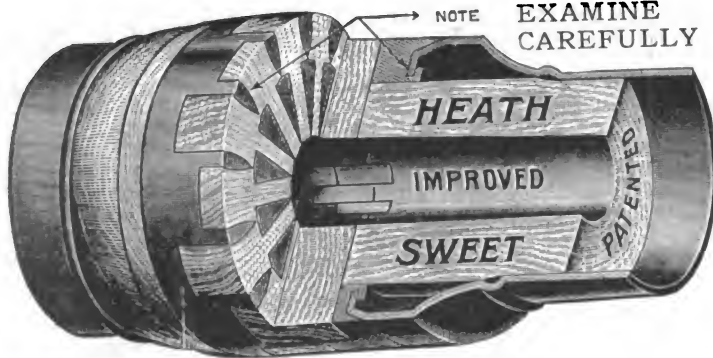
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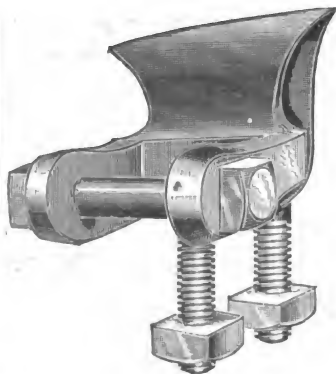
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## Skewed Shaft Couplings

**Regular or Oval Patterns  
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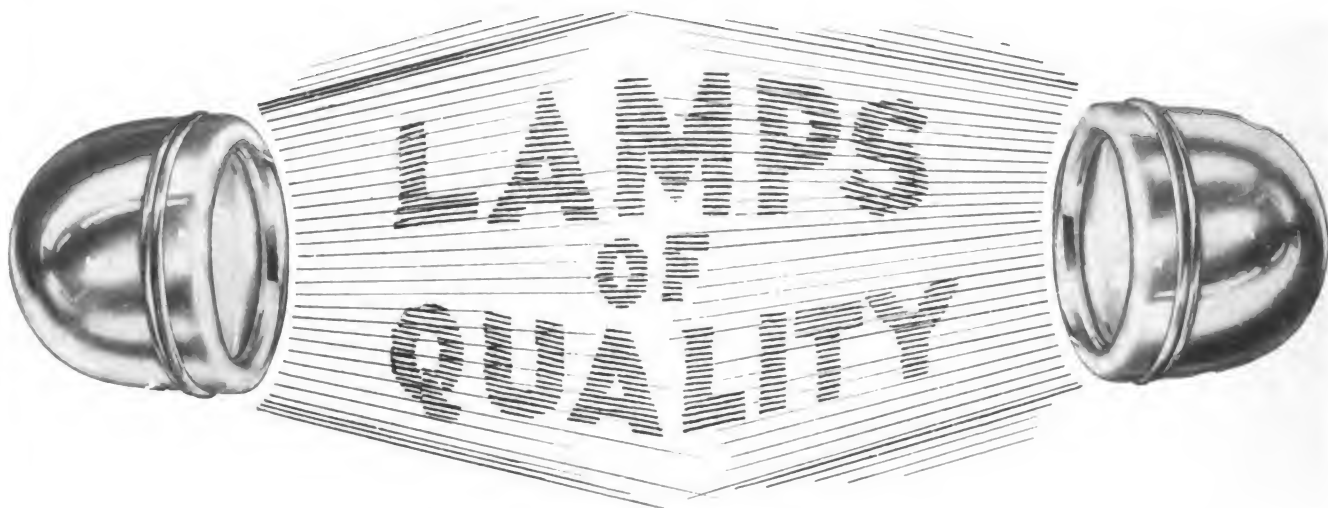
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Nowadays, in most sections, it is a violation of the law to drive at night without a proper light to warn both the man approaching and the man behind.

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are constructed to meet all the requirements of the lighting laws in all the different states, which means dependable illumination despite the worst conditions of road or weather. They are made to stand hardest usage.

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**ELECTRIC  
LAMPS  
FOR**



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*We are the Pioneers in making Electric Vehicle Lamps*

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They are made for oil, gas or electricity, and furnished in all designs, at all prices. Even though used on heavy trucks, they will not jar out nor rattle.

*We Furnish Lamps for Electric Lamp Equipment Co. Who Furnish Complete Outfit*

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**This is the way the lamps and equipment appear on a buggy.**

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Manufacturers of High Class Pigment Colors  
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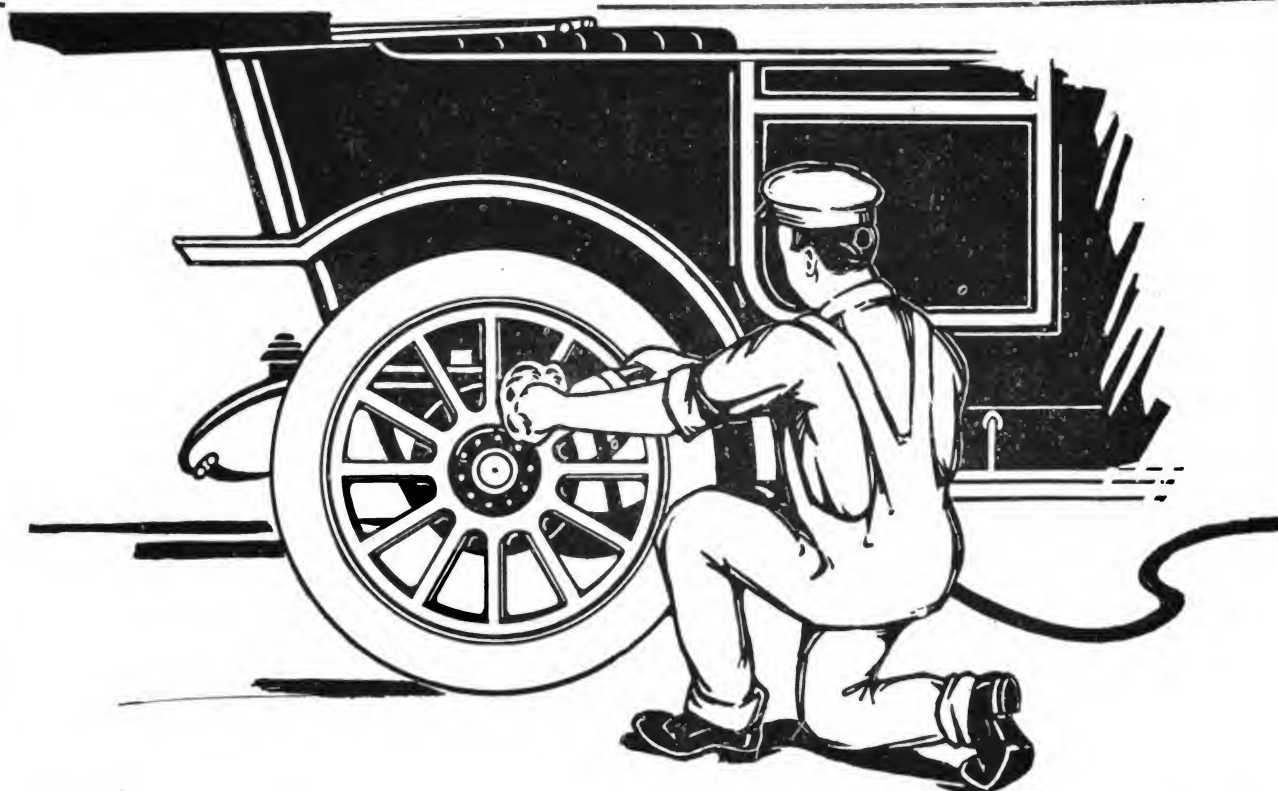
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Yes, this takes off the caked mud, glued on by the road oil.

But it also kills the varnish.

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You say you would be happy if there were a finish which would stay on your car, and keep its fresh, new appearance indefinitely, not affected by soapy water, road oil, mud and the sand blast of the road.

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after three years of experiments and service tests. No matter what other varnish it is compared with, the results are always the same. It lasts from five to ten times as long in the laboratory or on the car in use.

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Have the hoods, fenders and underparts of your car revarnished with Vanadium Chassis Finishing. They will look new and they will stay that way.

Tell your painter you want this material used, or you yourself send to us for two quarts of Vanadium Chassis Finishing, sufficient for a large car. Price, \$1.25 a quart.

The best varnish for the body is Valentine's Vanadium Body Varnish. Together these two varnishes give the best possible finish.

Mail coupon for booklet: "How to Have a New Car All the Time."

## Valentine & Company

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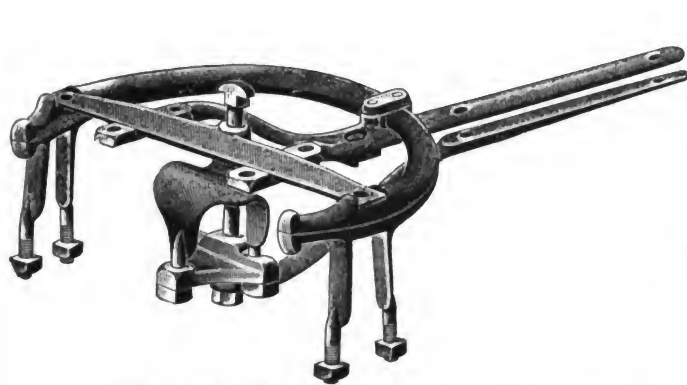
343 S. Dearborn St., Chicago

74 Pearl St., Boston

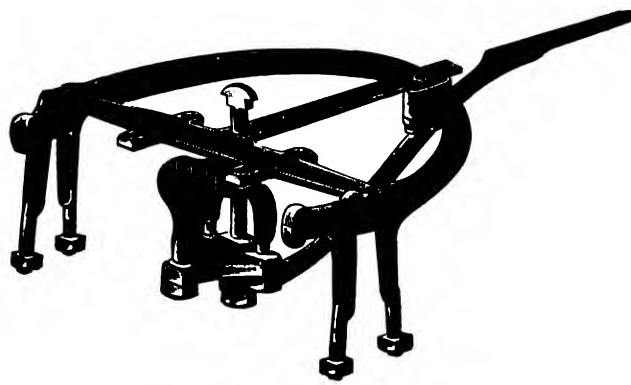
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Name .....  
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City .....  
State .....  
Cut off and mail to  
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# HEADQUARTERS FOR SPECIAL FINE GEAR IRONS [Dropped Forged] CARRIAGE HARDWARE



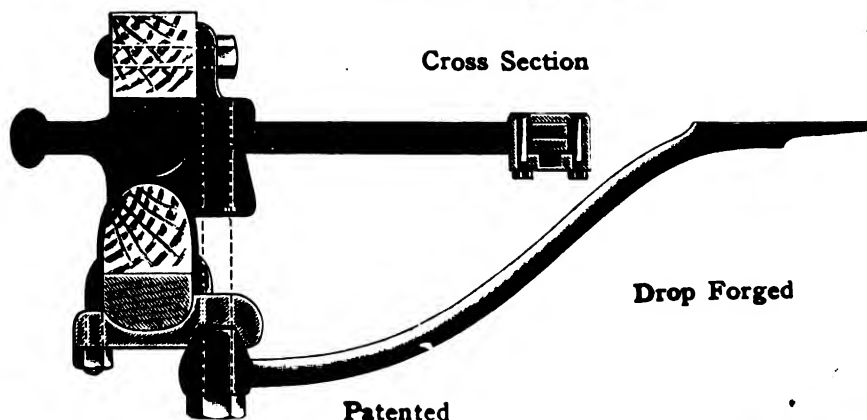
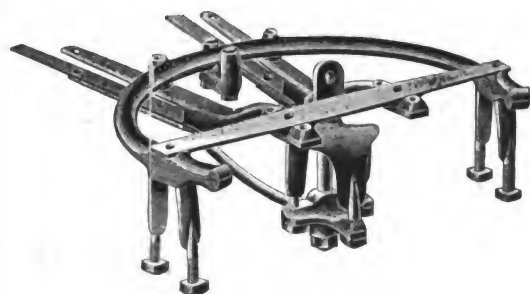
No. 1908—Gear Iron



No. 2000—Gear Iron

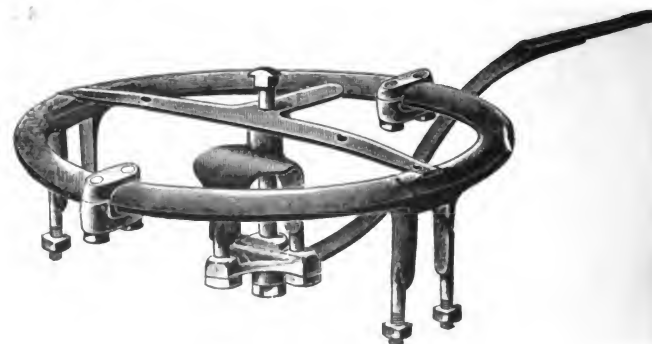
## WILCOX'S Mechanical 3 Prong King Bolt

Double Locked in Head Block  
Plate and King Bolt Yoke. No  
Strain on Bolt. No Turn on  
Nut. Guaranteed.

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No. 1905—Gear Iron

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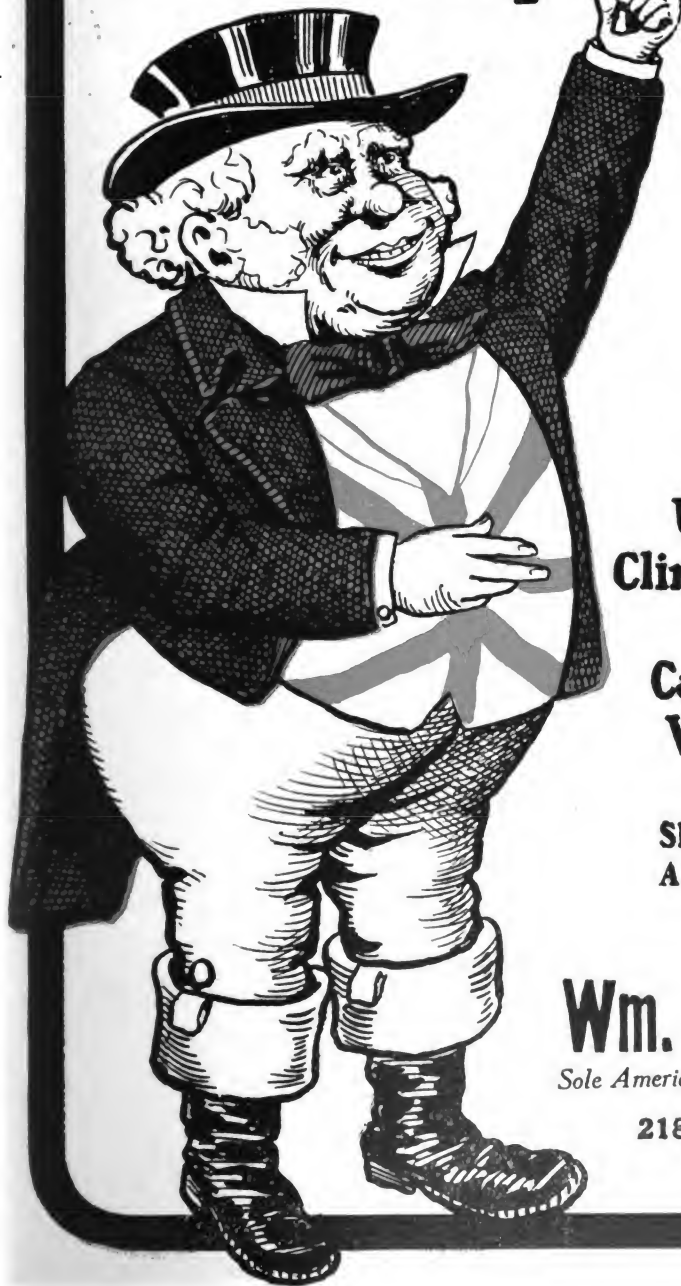
No. 1909—Concord.

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FORGED IRONS. Write us for pleasure

**The D. Wilcox Mfg. Co. Mechanicsburg Pa.**

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*Sole American Agent "Burbank" Motor Cloths*

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for a house or Finish,  
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With the increasing cost of Varnish, in recent years, there has been a foolish cheapening of Surfacing Materials.

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Materials for Surfacing have been lowered to the Price Limit.

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They give firm, elastic, *living* Surfaces; *which save* their cost many times over in the durability of the Finishes.

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That Lasts  
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NEWARK,  
N. J.  
CHICAGO,  
ILL.

# The Hub

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Vol. LIV

NOVEMBER, 1912

No. 8

## THE TRADE NEWS PUBLISHING CO. OF N. Y. Publishers of THE HUB

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TRADE NEWS PUBLISHING CO.,

(Signed) G. A. Tanner,  
Secretary and Treasurer.

Sworn to and subscribed before me this 1st day of October, 1912.

J. R. FRITH,  
Notary Public.

## Why Not Some Industrial Progress

The meeting of the Executive Committee of the Carriage Builders' Association in New York some time in November will be a very good time to discuss affirmatively the plan to broaden the scope and meaning of the association so as to make it representative of vehicle building.

Why continue the obsolete view that an automobile

is not a vehicle? Why assume by implication officially that a motor car is not a carriage when many carriage (sic) builders are as busy as possible buying motor car parts, assembling them, and going through all the paces of the other automobile assembler, who was never in the horse-drawn vehicle business at all.

The association should seek out all the helpful aids to the progress of the craft, no matter the kind of vehicle in demand. It should be sufficient that it is a vehicle made to negotiate the roads of the land for purposes of pleasure and traffic.

We believe there has been at all times in the association a feeling that the broader view is the right one, and we are also led to believe that the subject has been up for discussion in the Executive Committee more than once, but the conservative element had the most power or the loudest voice, and the progressive view could not prevail.

An amusing development is that some of the committeemen who were strenuous for keeping the horse-drawn vehicle in and the automobile out, are themselves edging into the automobile proposition at the present time, so there must have been a conspicuous reversal of opinion.

Why, then, would not this be a very good time to rearrange the scope of the association and consider a vehicle a vehicle no matter what its propulsive power, and broaden out into a real vehicle association catholic in its scope and efficient in the aid it is ready to afford all builders of vehicles.

The old-time carriage builder, under which name was grouped all things on wheels drawn by animals, never played favorites. He was ready to build anything the public wanted. Today if the public wants both kinds of vehicle, horse power and mechanical power, why not supply either and both?

Most of the automobile builders are simply assemblers. All parts of such a vehicle may be bought from specialty makers, and most of them are so bought. There is nothing mysterious about putting machinery together so it will do its appointed work, and any carriage smith is competent to do the work.

As for the body, its trimming, painting, construction, who is better able to cope with its conditions than the man who has made it for years a livelihood to do so?

It seems to us that now is the time, and the present is the opportunity for the Executive Committee to lead the way, and make the Carriage Builders' National Association really representative of all vehicle building, as was, without doubt, the intention of the founders.

## The Way We Burn Coal

An interesting if not startling fact in connection with the production of coal in the United States, according to the United States Geological Survey, is that in each successive decade the output is practically doubled. If the production of bituminous coal alone were considered, the record for the last fifty years would show an increase somewhat in excess of this ratio. The increase in the production of anthracite has been much less rapid on account of the limited area of the fields, the conditions under which the industry is carried on, and the restriction of the prepared sizes to domestic consumption. It has been estimated that the output of anthracite will reach 100,000,000 long tons annually before it begins to decline. The maximum production up to the present time has been 80,771,448 long tons. An increase in the annual production of bituminous coal may be anticipated for some time to come.

## The Panama Canal

The near completion of this work makes it important to business men to get down to a consideration of its practical aspects—how it will affect their business, how to determine the approximate place “where they get off.” This has all been elaborately worked out in the greatest detail by E. R. Johnson, professor of transportation and commerce in the University of Pennsylvania, under the auspices of the government, and in an issue of “The Nation’s Business,” under date October 21, the complete data has been gathered from the various government documents, arranged, condensed and clearly presented. A copy of this newspaper may be had by applying for it. It is published at Washington, D. C. We believe we are devoting space to the most important interests of our readers by calling attention to the matter, and the best and quickest way to put the reader “wise.”

## Order of Owls and Congress

In the 62d Congress in both houses 35,638 bills, resolutions, etc., were “introduced,” but the introductions were merely casual and soon forgotten. Who has heard of the Order of Owls? This esteemed body was able to get three senators to introduce three separate bills giving the owls liberty to roost in a private sanatorium on public land.

The vast majority of these bills refer to pensions, individual opportunity to exist at the expense of the tax payers. Is it any wonder we have “billion dollar Congresses or that expenses of plain living continually do increase? Why not stop it?

### THE OUTLOOK FOR THE FUTURE

These are the observations of Mr. W. Lawton Goodwin, an English coach builder:

First, let us review the position of our industry, and in the pursuit of our inquiry, by the law of sequence, I would first bring before your notice the position of the selling side, with all its complications and its variations.

Time was, when the chassis maker, the engineer, used the coach builder as an inexpensive vehicle employed to vend the

then unknown chassis to his old time carriage customers. There was a mutual confidence between the engineer and the coach builder, a mutual bargain, in which both parties had a reciprocal interest.

The coach builder built the body, and sold the chassis to his old customers, and launched the engineer upon a sea of commercial prosperity, which, at that time, was not within his grasp.

After some time, the coach builder was induced to underwrite the chassis maker's proposed manufacture, by placing contracts for chassis, paying deposits on accounts, and so financing the chassis maker, who, in return, appointed the coachmaker sole agent for a district or area.

The arrangement was an admirable one, inasmuch as it augmented the selling side of both the engineer and the coach maker.

When these arrangements had been in progress for some considerable period the formerly unknown chassis had been popularized by the coach builder—and in some instances by the coach builder's new competitor, the motor agent—financial aid, popularity, the coach builder's time, money, experience and good will, had been exploited by those astute gentlemen, who then deemed it necessary to embark upon the retail business themselves, and in some instances proceeded to withdraw from the agent his representation in the district, they themselves opening up a depot in the hopes of filching the customers which the coachbuilder or agent had made for them.

Several of the English motor chassis manufacturers have added to their engineering departments that of motor body building.

They embarked upon this enterprise in blissful ignorance of the cost, skill and handicraft abilities required to make a first class motor body. They overlooked the fact that the foundation of a first class motor body is dry and well seasoned timber. Having no experience, they did not realize this important factor.

Their entry into the motor body building business has been disastrous to themselves, their customers, and to the coach building trade; nor is it to be wondered at when one recalls the fallacious statements made by the chassis makers to the buying world.

“We have found it necessary to build our own bodies, for the reason that the coach builder knows nothing about them. His bodies are too heavy.”

So mendacious a statement stands without parallel in the commercial world, if judged by the results of the chassis builder's coach making productions.

The statements made by the chassis manufacturers as to weight and construction will not bear the light of investigation. The buying public have long since realized this, and the chassis maker who has been building his own bodies has done so to his cost. He has been put in the public scale and found wanting. The public is tired of his coach building efforts, hence the reason of the coach building shops of England today being full of chassis of all and every make having bodies built for them for clients who have realized that the coach builder can fill his requirements and specialize for his wishes far better than the engineer.

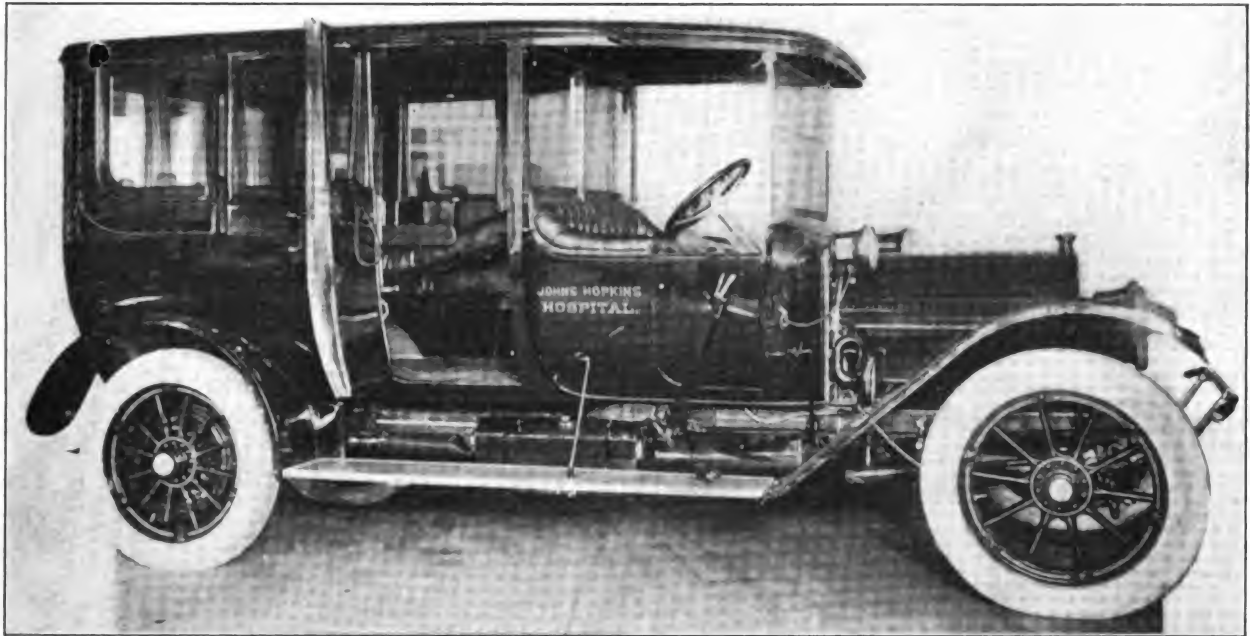
## NEW JERSEY AUTOMOBILE SHOW

February 15 to 22, 1913, are the dates that have been decided upon for Newark's sixth annual automobile show.

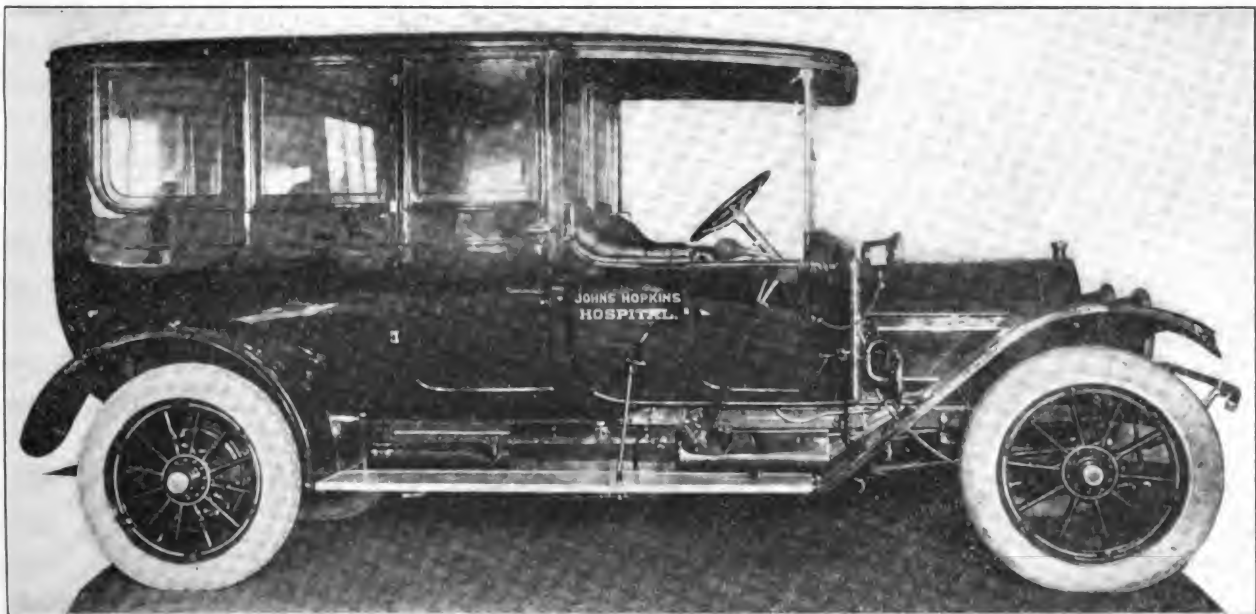
The show will be held in the First Regiment Armory, which is one of the largest buildings in the state.

## PERSONAL

S. H. Humphrey, for many years prominently identified with the automobile industry, has been appointed factory manager of the Oakland Motor Car Co., of Pontiac, Mich., his duties to commence at once.



AMBULANCE FOR JOHNS HOPKINS HOSPITAL (SIDE DOOR OPEN)



AMBULANCE FOR JOHNS HOPKINS HOSPITAL (CLOSED)  
Made by Cadillac Motor Car Co.  
(See Description)

## A Cadillac Ambulance for the Johns Hopkins Hospital, Baltimore, Md.

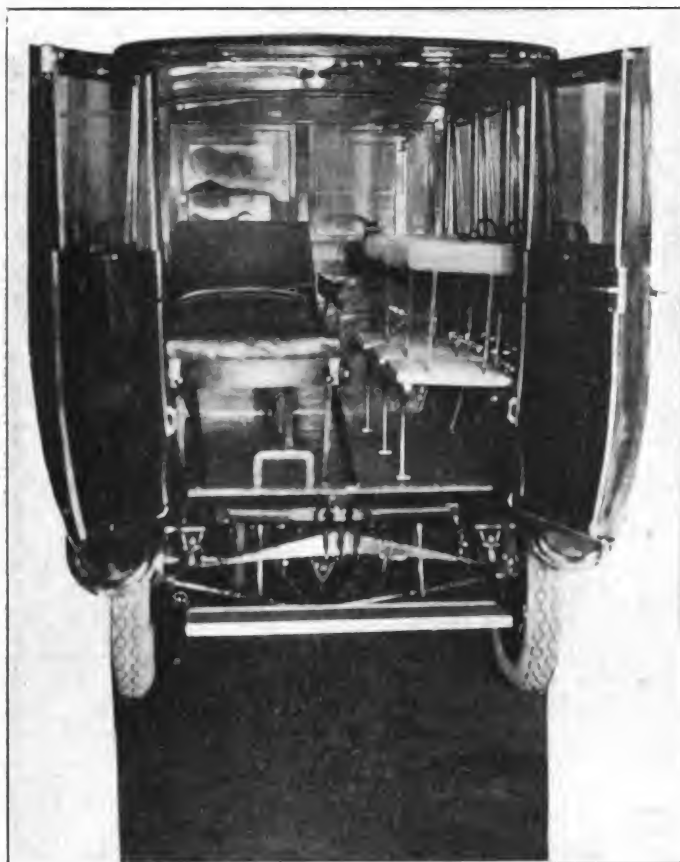
By Geo. J. Mercer, Automobile Body Designer.

The accompanying four illustrations of an ambulance show the most improved appliances and accommodations for an ambulance for hospital use. The body design is made to conform to the appearance of a limousine with low fore doors, and nothing about the exterior of the body would indicate an ambulance except the lettering on the side seat panels.

The entrance for the patient is by doors at the rear; these

Three folding seats fitted with backs and covered with close cane work are fitted on the right side of the car.

The interior finish is mahogany and no trimming of any description is used except that used on the bed and the covering on the seats. The floor is covered with linoleum bound with metal, and all metal parts are nickel plated. A large dome light operated from the driver's seat is fitted in the



Johns Hopkins Ambulance (Interior)



Johns Hopkins Ambulance (Litter disengaged)

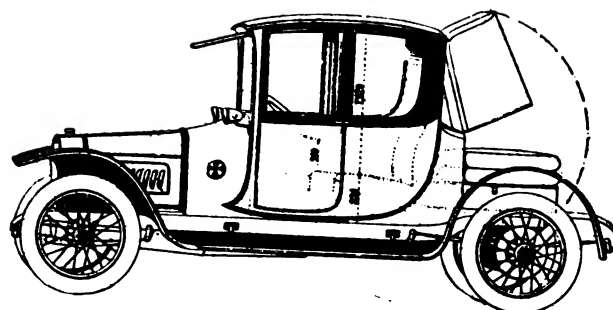
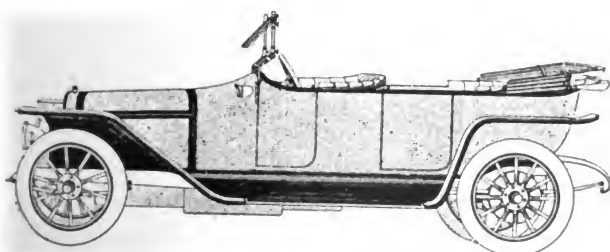
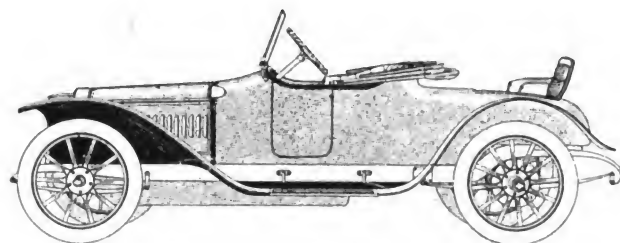
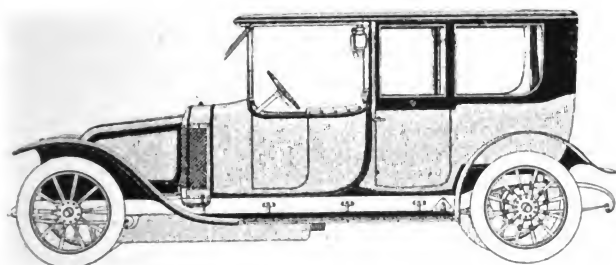
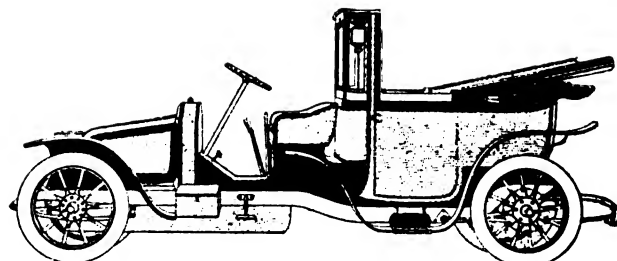
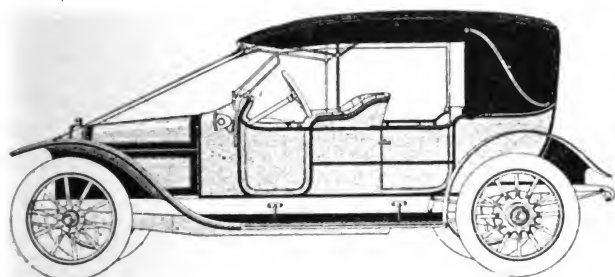
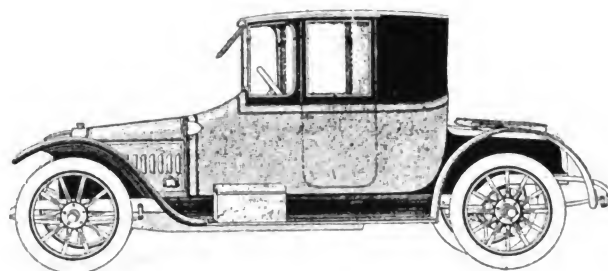
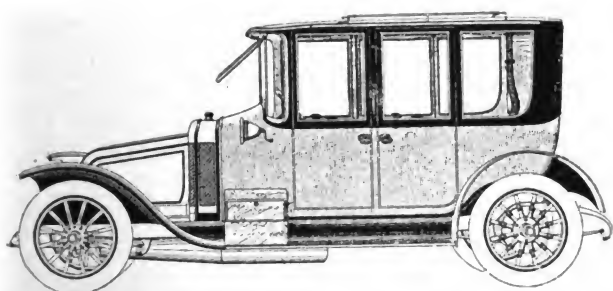
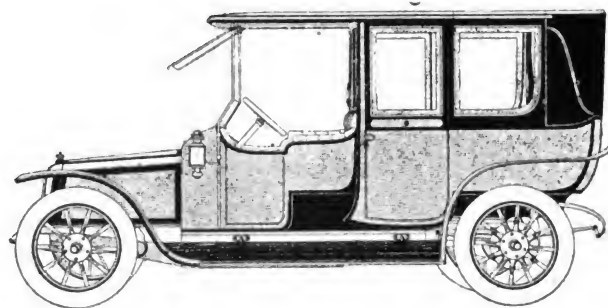
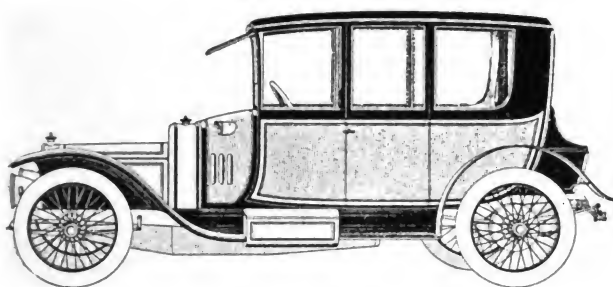
are the full height of the body. The bed, which is known as the Hill design, is the development of the idea of Mr. C. H. Hill, of the Cadillac Company, and it has been in use for some time on Cadillac ambulances. An investigation of the bed shows it mounted on a frame work that elevates it to the height of an ordinary seat, making it easy for the doctor to attend his patient. The front end of the bed can be raised or elevated to any angle desired for the comfort of the patient and the patient can be placed on the bed without its being detached from the body. This is arranged for by the front end of the bed being fitted with small rubber wheels that roll in guides that are inclined gradually downward toward the rear of the body, and the back end of the bed is supported by stationary legs that support the bed both when it is in position in the body and when it is rolled out to receive the patient. The incline of the guides are so gradual that one man can roll the bed back into position in the body without assistance.

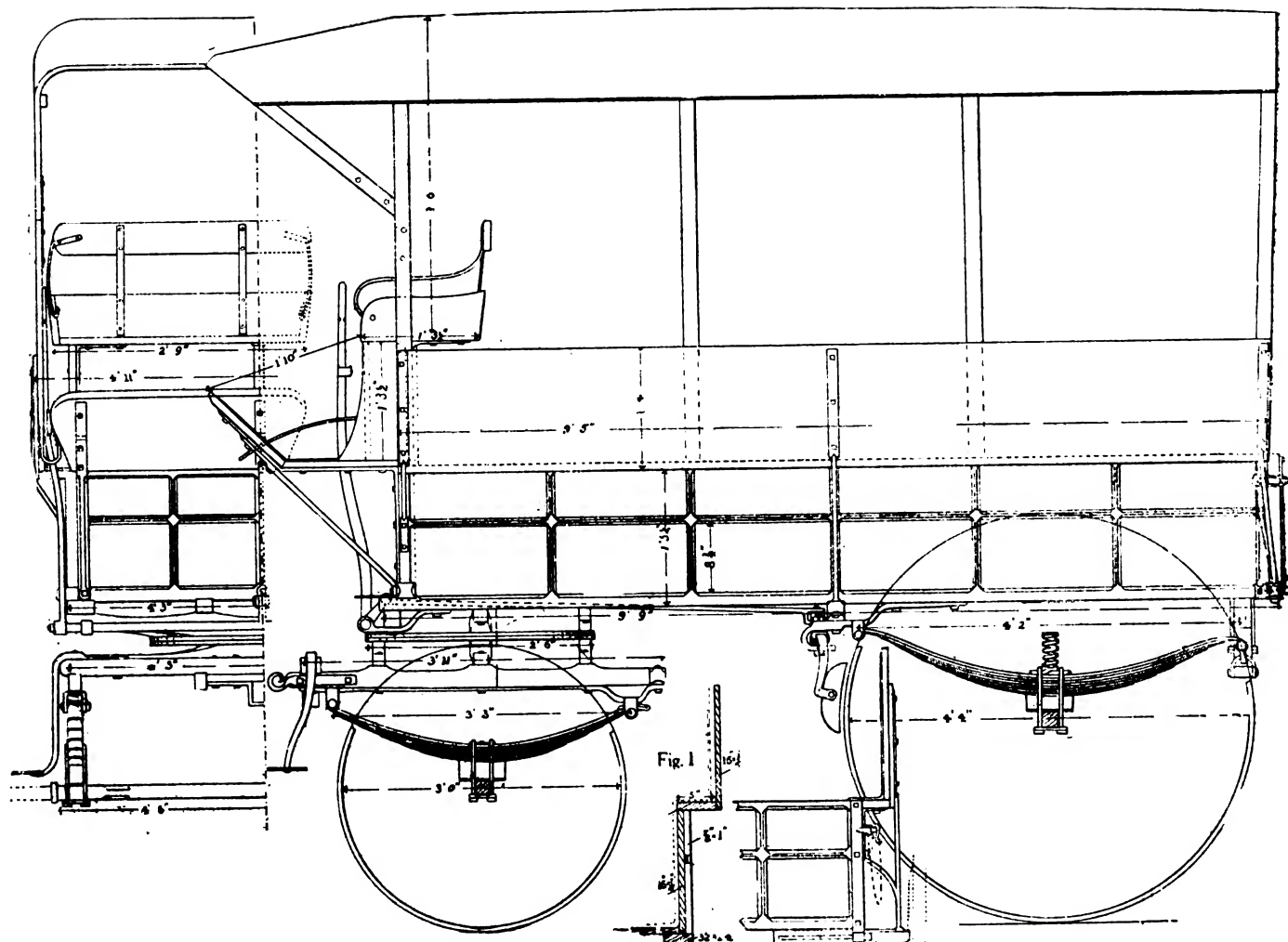
center of the roof. The color of the body is Cadillac blue with gold lettering and the leather is black pebble grain dull finished. The chassis is 134-inch wheel base, 36-inch tires, 1912 standard equipment Cadillac.

The adoption of the idea of eliminating the regulation ambulance features from an ambulance is in accord with the best thought in this line of work. With the adaptation of the automobile for this work has come in the possibility of adding a few more pounds to the body and making arrangements that are sane and that add to the comfort of the patient, far in excess of the slight additional cost or the slight increase in weight. The old idea of putting the bed on the floor and then having the attendant walk on it in order to reach the head of the patient may be all right for police department emergency service, but there is hardly any excuse for its continued use in hospital service.



## SOME FOREIGN STYLES





### BUSINESS WAGON

Showing the practice in other countries, we give a working draft from the Australian Carriage Builder, and annex the description of it.

The wagon which forms the subject of our working drawing is suitable for the delivery of general merchandise, the body being made large to admit the carrying of bulky rather than heavy packages, such as furniture, soft goods, etc. The carrying capacity of springs and axles is about two tons.

In some states it is usual with a van of this description to make the top the same width inside as the body, and to have a floating rail outside level with the body top rail. The plan here adopted is to extend the width of the top by an amount equal to the width across floating rails, and thus give the extra carrying space inside instead of outside. The driver's seat is set up above body frame, so that the whole of the floor space is available for loading. It is also made narrow on one side, which is a convenience besides being economy of room.

In construction, the body appears to be framed up as an ordinary express; in reality it is not. The panels are solid  $\frac{3}{4}$  x 16 in., and run the full length of body inside. The outside framing is made light, all the pillars and rails being the one thickness, namely  $\frac{3}{4}$  in. A sectional view is given. The tail-board is constructed in the same way, the framing being planted outside a  $\frac{3}{4}$  in. board, which is cut to the full inside size. The bottom sides are  $3\frac{3}{4}$  x  $1\frac{7}{8}$  in., top rail or ledge  $1\frac{1}{2}$  in. deep by 5 in. width, mortised for pillars. Back cross bar is made  $3\frac{1}{2}$  x 2 in. on the flat; front cross bar  $2\frac{1}{2}$  x  $1\frac{1}{2}$  in. The roof is ordinary pattern, with  $\frac{3}{4}$  in. bent bows, with battens over top and covered with heavy canvas. Roll up curtains are provided for side and back.

Undercarriage is ordinary platform carriage, with three

springs over the rear axle. Hind axles are  $1\frac{3}{4}$  in., and front  $1\frac{5}{8}$  in. Wheels are wood hub pattern, with  $2\frac{1}{8}$  and  $2\frac{1}{4}$  in. spokes, diameter 4 ft. 4 in. and 3 ft. in the wood. Sizes of springs—Side, 4 ft. 2 in. centers,  $2\frac{1}{4}$  in. wide; 8 plates; thickness of plates,  $\frac{3}{8}$  in. and  $\frac{5}{16}$  in.; front, 6 plates, 2 in. wide; 3 ft. 3 in. centers. Back cross spring, 8 plates,  $2\frac{1}{4}$  in. wide.

### S. E. BAILEY & CO. MOVE LANCASTER PLANT TO YORK

The plant of S. E. Bailey & Company, Lancaster, Pa., has been moved to York and will conduct its business in the building occupied by the York Carriage Company. The York factory is a branch of the S. E. Bailey & Company, and since the removal of the Kline Motor Car Corporation from the East End, it was decided advisable to merge the two plants. The new company will occupy part of the building used by the Kline corporation. It will retain the name of S. E. Bailey & Company. Most of the machinery and other equipment of the Lancaster plant has been shipped to York and is now being installed. Full operations are expected to be started by December 1. The firm employs about 150 workmen.

### MICHIGAN RETAILERS TO MEET

The ninth annual convention of the Michigan Retail Implement and Vehicle Dealers' Association will convene in Saginaw, November 19, 20 and 21. There will be about 800 delegates and visitors. The sessions will be held in the Auditorium. The chief entertainment feature will be a monster banquet to be served on the main floor of the Auditorium, November 20.

## NEW FOREIGN MODELS

The Motor (England) has published an extended consideration of the new aspects of the 1913 automobile. Our readers will find our digest of the account one way of keeping well informed as to the style movement.

The new cars are much further advanced than the lay motorist would imagine; the engineers have long since made up their minds as to the principal lines of their 1913 productions. The private user does not regard matters from the same standpoint as the designer; too often does the latter keep the theoretical aspect before his view, and in his striving for efficiency and lightness of construction ignore equally if not more important points, such as body accommodation and comfortable springing. The inadequacy of luggage-carrying arrangements affords an example of this failing. Those who design and test the cars rarely have occasion to take their belongings with them; if they do, the back seats will usually be unoccupied and the bags may be thrown in here. To the private owner who delights in lengthy touring, on the other hand, the question of the disposal of luggage is one of paramount importance.

It is clear there will be no radical alteration of general design or startling innovation for next year; and while it is certain that the present standard design is likely to undergo marked changes in the near future—when the rotary engine has made gearing unnecessary, and the full length of the chassis has become available for the body—no big move can be expected for two or three years to come. But the process of detail improvement has ample ground for its development.

The silent engine will be more silent than ever, not in relation to valve noise, for this has now been effectually put right, but as regards the many accessories. For instance, there will be no carburetor hissing or exhaust patter, and the minor fittings, such as magneto and air pump, will "click" no longer. The opinion may safely be hazarded—based on definite knowledge—that the non-poppet engine will continue to be very popular. Not only will the sleeve-valve engine be seen on new makes, but the other styles of "valveless" motors will be out in full force, and, quite possibly, the two-stroke type will at last make a determined bow to the public, introduced by a maker of high repute. The two-stroke engine has got to come; whether it reaches popular favor next year or later is immaterial so far as its final success is concerned. But, of course, even the two-cycle engine is but a temporary improvement; the rotary motor, in the shape of the gasoline turbine—or, rather, the kerosene or oil turbine, since a motor of this sort would offer no vaporization difficulties—will be the great feature of the exhibition of 1920.

A general feature of next year's engines will be the self-starter.

Consideration of the many excellent cars which today rely on natural circulation of the engine cooling water suggests that the abolition of the water pump might well be made a feature of the 1913 design. A cleaner and neater engine must result from this step, and, in addition, there is the great advantage that the cooling varies itself almost automatically to give best results; that is, the engine never becomes too cool in winter, but keeps at the most efficient temperature—just below the boiling point of the water jacket. Speaking of cooling calls to mind a useful suggestion which may interest designers—the cooling of the main bearings. It is a certain fact that the interior of the crank case is extremely hot—that is why every effort should be made to cool the oil and thus to conserve its viscous properties. An additional means of lowering the temperature of the bearings is by taking the air for the carburetor from inside the crank case; this proceeding, however, causes the dust from the entering air to become deposited in the crank case oil and eventually to cause harm to the bearings. Hence a useful idea, adopted this year on an American car, is to have a long gallery or passage cast inside the crank case,

passing along and round about the bearing seats, and the constant rush of air along this gallery on its way to the carburetor and engine cylinders keeps the bearings nice and cool and thus minimizes wear.

Automatic magneto advance is, when correctly incorporated, a very excellent feature which is well worth general adoption. Those who have had experience of this system will agree that the results are quite good from the power standpoint, while the resulting simplification of the control by the elimination of one lever from the wheel is worth the alteration of design.

The matter of lubrication provides another subject for discussion, not so much in regard to the system employed—though the pressure supply in copious quantities may be postulated as the ideal type—but as regards the minor details. For instance, on next year's cars there must be adequate arrangements for indicating the level of the oil. Many present-day engines have an overflow tap to indicate the maximum level, but as soon as a small quantity of oil has been used the supply falls below this level, and henceforward the driver is in sublime ignorance as to how much oil remains. A glass level gauge, if properly protected, is quite satisfactory, as is also the float and rod. A simpler method employed on one well known car is to have a three-way tap, which successively indicates top level, half level, and empty. When oil will not flow from the second tap it is time to think of replenishing the supply. Gauges for the gasoline tank are quite desirable.

In regard to the transmission gear, a word may be said in favor of the leather cone clutch running in oil. This is a smooth-acting and simple form, and if a light, pressed-steel member be used as the basis, the moment of inertia of the driven portion is low, and, consequently, gear changing is greatly facilitated. It is a moot point whether the chain gearbox will be popular next year or not. If the standard spur gearbox is being retained, the designer should arrange that the layshaft gears are out of mesh on top gear—this effects a great improvement from the aspect of silent running, particularly when the car is coasting down hill.

The worm drive of the rear axle promises to be more generally employed next year, for silent transmission has become a necessary correlative of the noiseless engine. Many of the leading makers are experimenting with a view to the adoption of the hollow type of worm; this form gives results which are closely comparable with the bevel so far as efficiency is concerned. The successful employment of worm gearing is simply a matter of correct mounting, of adequate provision of ball-thrust bearings, and of copious lubrication. Any trouble which may have occurred in the past has invariably been due to the failure of these conditions, and not to any defect in the gears themselves.

Let us have proper torque rods. Rear springs may more reasonably be expected to perform their suspensory duties if they are relieved of other work, and, in addition, they may be made lighter and more flexible if provision is made elsewhere for the transmission of the thrust from the road wheels and rear axle to the frame.

A minor point which is worthy of note relates to the silencer. The popularity of the cut-out, now permanently banned, has been almost entirely due to the inefficiency of the average silencer, which so quickly becomes clogged up with burnt oil. If the end plates are so arranged that the interior may be cleaned out without much trouble, this portion of the car will receive regular attention, and satisfactory results be permanently secured.

While detachable wheels or rims of one sort or another will be found on almost every car next year, it is certain that the wire-spoked variety is not going to have matters all its own way. The pressed-steel-spoked wheel has much in its favor as regards appearance and cleanliness. Better provision should

be made for the storage of the spare wheel; if this has to block up the front entrance on the driver's side, at least some better attachment can be devised than the present collection of side arms and straps. But there is no good reason why the spare wheel should be an eyesore and an obstruction; a sliding drawer under the rear of the car would solve the problem, and, failing this, the dummy hub on the rear panel is preferable to the orthodox arrangement.

Consideration of the manner in which the offside front entrance is usually obstructed by the spare wheel suggests that, if this arrangement is to be continued, it would be worth while to make the offside of the body continuous—that is, to dispense with the offside rear entrance as well, since this is comparatively rarely used. By this method a more rigid and lighter body could be constructed and the tendency to rattle greatly reduced. The mention of body noises prompts the suggestion that the method adopted on one well known make of insulating the body from the frame by means of rubber buffers is excellent in every way, and designers should study this construction with an eye to their next year's productions. Body making will probably undergo revolutionary changes in the next year or so; pressed steel construction for the body shell is spoken of as an immediate development, and it is only one step further to the construction of chassis frame, engine cradle, and body shell all in one big pressing. A considerable saving of weight would result from this method.

Next year's bodies ought to have adjustable front seats. It is unnecessary to enlarge upon the inconveniences of the present system, whereby the short and the long driver are compelled to actuate the same pedals, and to hang on to the same steering wheel. It is a comparatively simple matter to make the two front seats adjustable both backwards and as regards height; at the same time the pedals should be adjustable.

The perfect "all-weather" body has not yet arrived; designers must get ahead in these next few months and produce the desirable form of light cabriolet. It would not require a great deal of ingenuity to produce a "one-man" cape hood, with properly fitting side curtains and a division between front and rear portions, which would satisfy the requirements of the average motorist; the execution of most of these ideas is comparatively simple—the difficulty seems to be to get the designer to appreciate what the private user wants.

Proper ventilation for the front portion of the body is essential for comfort in summer; this matter must be given full attention in next year's designs, and at the same time provision might well be made for heating the rear portion of the car in winter. A well-lagged by-pass from the exhaust pipe would suffice, with a screw-down valve, which the passengers could regulate according to their requirements.

Cars should be made more dustless. Designers should be compelled to exert their utmost endeavors to produce cars which will raise less dust.

### PHYSICAL AND CHEMICAL EXAMINATIONS

It is to be noted that, even in such instances of glue as making up wood joints, it has become necessary to supplement the physical with a chemical examination of the glue, the more so in view of the complicated modern practices of treating stock.

From the physical standpoint, as well as the chemical, the presence and amount of acid or alkali is of interest, because either condition is apt to affect the proper reaction with certain woods owing to the natural constituents of the latter.

But apart from this consideration, the question as to whether a glue joint is going to hold for the requisite length of time or not is paramount. An accurate forecast of this can be formed only upon adequate chemical analysis of the glue.

Analysis shows that some hide glues contain an appreciable amount of iron. This element is fatal to the life of a glue, not because it reacts with the wood but because of its slow inter-action with the constituent elements of the glue itself.

### AN ENGLISH VIEW

Mr. G. R. Thrupp, president of the Institute of British Carriage Manufacturers, says:

The proportion of profit in the horse carriage days was much larger than it is in the motor trade, but even then I saw nearly 100 coach makers close their doors through insufficiency of trade and practically no fresh ones started in the industry, and one ominous fact remains that I now know of only one firm of Jews left in the trade, and nobody knows better than Jews where their bread is buttered. I have vainly tried to find in England, America and Europe a coach maker who made his fortune out of coach making in the last portion of the last century, and most of those who are reputed to be very well to do I invariably discover to have married wealthy wives, which was a better investment than in carriages. I fear that in the present day, with the enormous competition, that we must be thankful if we can pay our way year by year, and not expect to be able to make money to put by. I have for many years tried to get the prime cost of cheap carriages and cheap bodies, but have failed to do so. The people who produce them usually fail and their productions have generally failed to please the public. Again, since the budget of 1909 rich clients have tightened their purse strings and picketed their hen roosts so that the margin of profit is on the wane, necessitating a larger turnover, which again requires increased working expenses. With every respect to the associate members, I think they are occasionally inclined to bolster up tottering firms whose businesses would be better closed altogether for the sake of their solvent competitors and for the bank balances of the accessory traders.

### LORD BELHAVEN'S SUGGESTION

Tables for the conversion of units from the metric to the English system and vice versa are found in handbooks dealing with mathematical or engineering subjects, so that we are today able with considerable labor to translate into our own units any measures or weights which are given to us in the French system. We find that

$$1 \text{ inch} = 25.4 \text{ millimeters}$$

which indeed is an awkward figure with which to deal. Half an inch will obviously equal 12.7 millimeters, while  $\frac{1}{4}$  inch will equal 6.35 millimeters, and so on. A very useful suggestion was made by Lord Belhaven and Stenton, who suggested that, for the conversion of measurements which did not require extreme accuracy, it would be more convenient to assume the inch equal to 25.6 millimeters. This figure would then give us a table as follows, which is seen to be very easy to determine, and which is sufficiently accurate for all ordinary measurements:

25.6 millimeters	= 1 inch
12.8 millimeters	= $\frac{1}{2}$ inch
6.4 millimeters	= $\frac{1}{4}$ inch
3.2 millimeters	= $\frac{1}{8}$ inch
1.6 millimeters	= $\frac{1}{16}$ inch
0.8 millimeter	= $\frac{1}{32}$ inch
0.4 millimeter	= $\frac{1}{64}$ inch

### THE BEST WRITTEN "STORY" EVER

We mean that given in a booklet issued by the Chalmers Motor Co., named "Story of the Chalmers Car."

We presume the author is Mr. Chalmers, as he is an acknowledged past master at such work.

A special plea that can be put in such frank, engaging, convincing and rational argument is but a proof of the power of originality over humdrum, half-baked mental processes that pass as advertising efficiency.

Friend, competitor or customer (for the latter it is written) cannot rise from its reading without being strongly impressed in many more ways than one.

# NINETEENTH ANNUAL CONVENTION

## National Implement and Vehicle Association

### CLEVELAND, OCTOBER 23-25

The Nineteenth Annual Convention of the National Implement and Vehicle Association was held on October 23-25, at Cleveland, and was attended by manufacturers from all sections of the country.

President Frank C. Johnson (Springfield, Ohio) called the convention to order in the Hotel Statler, and after prayer was offered introduced the Mayor of Cleveland, who gave the manufacturers a warm welcome.

H. M. Kinney responded.

From that on the business of the convention moved smoothly and important work was done.

The convention program follows:

Wednesday, 10 a. m.—Call to order, President F. C. Johnson; invocation; address of welcome, Mayor Newton D. Baker; response, H. M. Kinney; announcements; annual address of president; resolution, necrology; reports of officers and committees. These will be brief and accompanied by recommendations which it is desired to discuss. The officers and committees follow:

Executive committee—Chairman, William Butterworth; treasurer, C. A. Pattison; secretary and general manager, E. W. McCullough.

Membership committee—A. J. Brosseau; attorneys and litigation, S. E. Swayne; attorneys, Bulkley, Gray & Moore; freight transportation, W. J. Evans; employers' compensation legislation, W. H. Stackhouse; costs, G. W. Crampton; dealers' association and arbitration, W. S. Thomas; fire insurance, H. N. Wade; national legislation, H. M. Kinney; state legislation, H. M. Wallis; terms and credits, J. A. Craig; foreign commerce, A. B. Farquhar; tariff, Paul E. Herschel; patents, Joseph Dain.

Tuesday, 10 a. m.—Call to order; address, "Fire Protection," Franklin H. Wentworth, secretary National Fire Protection Association; address, "The American Manufacturer and Industrial Education," by Dr. E. A. Rumley.

Afternoon session, 2 o'clock—Stereopticon lecture, "Safety," Robert J. Young, Illinois Steel Co.

Friday, 10 a. m.—General trade conference.

Afternoon session, 2 o'clock—Amendments to bylaws; reports of committees on necrology, resolutions and nominations; election of officers; miscellaneous and new business; selecting place for 1913 convention; adjournment; meeting of the new executive committee immediately after the convention adjourns.

The Cleveland committees arranged the following entertainment features:

Wednesday afternoon—Reception and tea for the visiting ladies at Hotel Statler, 4 p. m.

Wednesday evening—Theatre party, Opera House, 8:15 p. m. Play, "Passers-By." After theatre, luncheon at Hotel Statler, Pompeian dining room.

Thursday afternoon—Luncheon for the ladies at Country club, 1 p. m., with automobile ride through boulevard and parks.

Thursday evening—Reception and ball in the grand ball room, Hotel Statler, 9 p. m.

Friday evening—Annual banquet, Hotel Statler, 7 p. m.

The report on Dealers' Associations and Arbitration included the following features:

The Campbell bill, requiring makers to put their names on all goods sold.

An honest advertising bill, requiring only truthful statements about goods.

Factories to have their travelers posted on the cost of doing retail business, and instructed to talk it up with all new dealers who retail goods too cheap.

Factories and jobbers not to overload dealers, not to put agencies too close together.

Shorter terms.

Local clubs, as a means of reaching dealers not members of state associations.

Continued education of dealers on the "Cost of Doing Business."

A larger discount on repairs.

The Federation's help was asked to persuade dealers not to give away too many free repairs at the factory's expense.

Not to insist upon cash discounts too long after cash discount dates.

Paying little attention to inquiries sent them, and some other things.

The Committee on Terms thought it should suggest to the owners of the different concerns, represented in the membership, that they, personally, investigate the question of terms of sale, under which they are operating their business, and especially urge them to confer with their customers on this subject, feeling sure they will be surprised in many cases how easy it would be for them to adopt a different policy than the one now in use.

Some of the officers of the companies represented in the membership have the wrong impression as to the terms they have to make on their goods, and do not realize that they are being affected more by custom than by the actual demands of the trade. Proof of this condition would seem to be sufficient when we know that we buy our material on very short time, and that the farmer who uses our product sells his product for cash. There certainly is no good reason why we, as manufacturers, cannot come nearer to this system of doing business.

This committee recommends that this agitation for shorter terms continue, and if possible, that this convention adopt some plan even if we cannot put it into effect at once.

The committee continues that during the year it had a member of the association represented on all the programs of the Retail Implement Dealers' associations, in the central west, and these speakers have paid special attention to this question of presenting the necessity of the retail dealer knowing what it costs him to do business, and the committee recommends that this work be kept up to gain the desired results.

Some means is sought to interest the retail dealer who is not a member of any association, and knows nothing about the value of such a membership, and does not attend any of the conventions, where these various subjects of vital interest to them are being presented.

The committee has suggested that the salesmen be employed in the work, using uniform methods, so as to bring about the desired results.

It has also developed that one of the best means of reaching a large number of dealers and assisting them to improve their present financial and business condition is through the local club. The Retail Dealers' associations have long recognized the value of the local club in conducting the affairs of their



associations, but they have been handicapped in furthering this work on account of not having sufficient finances.

The Executive Committee, wishing to do something to help along with it, adopted a resolution June 27, after having had the subject presented to them by report of a committee from the salesmanagers' department:

"That the association shall, through a committee, propose to the National Federation of Retail Implement and Vehicle Dealers' Associations, which will hold their annual convention, Chicago, in October, in furthering the work of cost education through the formation of local clubs of dealers, that if the Federation and its constituent associations will undertake to form such local clubs, that for every club organized under the constitution and bylaws provided by the Federation, consisting of not less than ten implement dealers, this association will undertake to provide for such expense to the extent of \$25 for each club so organized."

The dealers accepted the proposition.

W. H. Stackhouse, who read the paper on employees' compensation legislation, presented three questions as vital. First, he placed prevention of accidents; second, provision for specific indemnities for various accidents; third, discouragement of litigation.

"The ideal method," he said, "is dividing the expense of compensation among the three groups benefiting by industry, following out the German plan. This is done by dividing the expense between the employer, the employee and the public.

"The modern tendency in this country, however, is to put the whole burden of compensation for accidents upon the employer, to let industry bear the burden.

"The plan of compensation should be equally and absolutely compulsory, both between employers and employees. It should be mutually contributory in character.

"The cost of administration of the law should be borne by the government, and the indemnity fund should be contributed to by employers and employees, the latter paying not less than 25 per cent."

To insure the safety of workmen it was recommended that members of the association take the initiative in unusual departures from usual customs in safeguarding employees.

Free cigars for employees encircled with bands on which are printed rules for the prevention of accident while working at a certain job or on a certain machine is one of the recommendations of the safety committee.

The committee also recommended that the safety crusade be carried into the homes. Calendars containing a safety rule for each day in the year would be ideal, the committee claims, and would interest the family in safety of the men of the home.

Ohio was declared to be the only state with ideal employees' compensation legislation.

Chairman H. N. Wade, of the fire insurance committee, has a plan of adequate protection at minimum cost. The plan is a fire insurance company to be comprised of implement and vehicle manufacturers which "will save \$100,000 annually to them in premiums."

Although implement and vehicle manufacturers have been meeting for nineteen years, the association has been organized but two years. During the past year there has been a net gain of seven in the membership. There are now 119 associate and 159 active members.

The tariff question, presented by Paul E. Herschel, dealt solely with the recent severing of trade relations with Russia. The association will ask and use its influence in the return of the United States to the former friendly relations with Russia.

Recommendations by the freight transportation committee were that members of the association more fully co-operate in supplying information against rate discrimination, and in the furnishing of witnesses at hearings the association has before the interstate commerce commission.

Franklin H. Wentworth, secretary of the National Fire Protection association, delivered an address on fire protection.

There was a stereopticon lecture on "Safety," by Robert J. Young, of the Illinois Steel Co.

There were more than 400 members of the association registered at the convention headquarters in the Hotel Statler.

The Committee on Nominations recommended the election of the following officers for the ensuing year:

President—William Butterworth.

Vice-Presidents—E. C. Douglas, J. B. Bartholomew, F. B. Park, C. W. Hart, J. M. Preston, J. H. Anderson, C. B. Dempster, Fred. H. Bateman, A. J. Arend, A. B. McLean, R. S. Buch and George R. James.

Treasurer—H. N. Wade.

Chairman Executive Committee—J. A. Craig.

Members of Executive Committee—G. A. Ranney, J. A. Craig, H. M. Wallis, H. E. Mitchell, Paul E. Herschel and E. A. Rumely.

Appropriate acknowledgments were made by Mr. Butterworth and Mr. Craig.

E. W. McCullough, Chicago, Ill., continues as secretary and general manager of the association.

Peoria was selected as the next meeting place.

The Auxiliary Association held its annual meeting on October 24 in Cleveland and elected officers, as follows:

President—S. D. Latty, Cleveland, Ohio.

First Vice-President—Louis M. Hensch, Chicago, Ill.

Second Vice-President—H. C. Ware, Cleveland, Ohio.

Third Vice-President—W. H. Eaton, Chicago, Ill.

Chairman Entertainment Committee—J. F. Donahue, Chicago, Ill.

Chairman Membership Committee—William A. Mitchell, Chicago, Ill.

Secretary and Treasurer—E. J. Baker, Chicago, Ill.

The convention was most successful in all its features.

## NATIONAL RETAILERS' CONVENTION

The thirteenth annual convention of the National Federation of Retail Implement and Vehicle Dealers' Associations was held at the Lexington Hotel, Chicago, October 8, O. Gossard, president, in the chair.

Delegates in attendance were: Western Retail Implement and Vehicle Dealers' Association—O. Gossard, T. G. Wiles, H. J. Dodge, E. I. King and C. F. Miller.

Illinois Retail Implement and Vehicle Dealers' Association—W. L. Derry, Jos. G. Baker, J. A. Montelius, Jr., James Ryan and A. R. Keeler.

Wisconsin Retail Implement and Vehicle Dealers' Association—F. R. Sebenthall, F. C. Borchardt, D. W. Allaby, J. H. Hayden and Arne Johnson.

Minnesota Retail Implement Dealers' Association—C. M. Johnson and C. I. Buxton.

Iowa Implement Dealers' Association—E. P. Armknecht, W. D. Hoyt and J. H. Hager.

Mid-West Retail Implement and Vehicle Dealers' Association—M. L. Goosman, Paul Herpolsheimer and O. A. Rystrom.

Tri-State Vehicle and Implement Dealers' Association—P. T. Rathbun, Geo. P. Wagner, T. J. Turley, C. H. Little and W. G. McMakin.

South Dakota, Southwestern Minnesota and Northwestern Iowa Retail Implement Dealers' Association—J. E. McDougall and M. D. Thompson.

Mississippi Valley Retail Implement and Vehicle Dealers' Association—W. G. Mangold.

Michigan Retail Implement and Vehicle Dealers' Association—C. L. Glasgow.

President Gossard reviewed the work of the past year, as follows:

I desire to refresh your memory on a few things of much importance and some of value in a financial sense. Had it not been for the united effort of the manufacturers' association and our Federation in securing a suspension of the freight classification, retail dealers would have been out many thou-

sands of dollars, and the railroad companies would have had the money which justly belongs to our customers.

Rapid advance and good results along our cost educational lines through the efforts of manufacturers, jobbers, and our constituent associations have attracted the attention of the entire business world and taught many of our implement dealers to figure that the difference between the wholesale price at Chicago and the retail price at home is not all profit and that all expense of conducting the business must be deducted before there is any profit.

The local club question remains a live issue and is really one of the important topics for our consideration, since most of the differences between local dealers are to be adjusted through that channel, as it has proven to be the best and about the only way to settle minor differences that arise between retail dealers.

Another event during the year which should not be overlooked was the recognition of our organization by the Chamber of Commerce of the United States of America in the election of our secretary as a member of its board of directors.

I would not have you fail to recognize with me that many questions we have had to solve in the past have been worked out much like the man who used the best thread and needle and with utmost care made every stitch exactly the same in sewing the rip in his sleeve, but when he drew the thread up tight it came out because he had failed to tie a knot in the thread. In all we do hereafter let us be sure to have a knot in our thread.

Under our organized efforts we have been able to bring about better conditions until even the implement business is looked upon as an honorable business and we are able to get some profit and much pleasure out of it.

The parcel post question should not be lost sight of since congress has placed the entering wedge, but if possible use the same for the welfare of our customers.

The freight rates and classifications are never permanently settled and it is important that all associations stand guard and be ever ready to enter protest against unjust charges.

While there has been a slight reduction in express rates we yet feel they are beyond all reason and need more revision downward.

The matter of salesmanship, advertising, collections and legislation can be brought so prominently before our associations that each individual can get new ideas and use them to good advantage when he returns to his home.

With these few suggestions I will not detain you longer.

#### Secretary's Report

Secretary Hodge then read his annual report:

The past year has been one marked by good progress in association work. It has shown the efficiency of persistent and well-directed efforts and the advantage of organization along conservative lines. There is but one medium through which the problems which confront our business will be solved and that is through the influence exercised by united force. This Federation is that united force, and its power will be what you make it.

The tangible benefits secured, those that can be computed in dollars and cents, mark the past year as the most notable one in the history of the Federation and should, if dealers have a proper appreciation of benefits, cause our constituent associations to show a wonderful increase in membership.

With few exceptions our constituent associations have increased in numerical strength and have been aggressive in advancing the cause for which they are striving, and many of them have bettered their financial condition by holding exhibits during convention week.

We now have sixteen associations enrolled, the Virginia and North Carolina association having been admitted to membership during the year.

Some progress has been made in our opposition to the appearance of manufacturers' advertisements in farm papers whose editorials advocate mail order buying and the complete elimination of the middleman.

In some localities manufacturers' retail branch stores are causing dealers some uneasiness and annoyance. It is of so much importance that it should have your attention at this time.

The chief work the Federation has had in hand the past year is freight classification. You are familiar with this, but I make a detailed report for the purpose of getting it into the records.

Our secretaries have all met with the same trouble in adding new members that always has and probably always will prevail, namely, indifference upon the part of a certain class who are willing to accept conditions as they are and will not exert themselves to better same, or are content in the feeling that someone else will do the work while they secure the benefits.

We, as the representatives of the retail implement fraternity

of the United States, cannot disguise the fact that there is an element engaged in our line of business that is woefully lacking in knowledge of the mercantile business, and that makes it necessary to pursue educational methods continually if we would reach the maximum of success in our effort to raise this business to the highest standard and make our associations of the greatest help to members.

The sales managers' organization of the National Implement and Vehicle Association has had under consideration a plan to advance this educational movement with the co-operation of this Federation, and the success of the local club movement as an educational factor, where inaugurated, has convinced them that they can benefit conditions greatly by giving it substantial encouragement and financial help. With this end in view the sales managers' committee at a recent meeting outlined a plan which they ask the privilege of submitting to this Federation. This move on the part of manufacturers contemplates the study of the cost accounting question and a general effort to make better business men of those engaged in implement selling.

The Campbell bill, requiring manufacturers to mark their product so as to indicate clearly by whom made, has been introduced in Congress. Many retail organizations have declared in favor of it, having in mind the effect it would have upon sales by manufacturers to mail order houses. Plenty of opposition to the bill has developed, but it would be well to consider it at this time and decide upon a course to recommend to the legislative committees of our various associations.

Now that a peddlers' license law has been so framed as to stand the constitutional test when carried to the United States supreme court, it would seem to be proper and right for this Federation to recommend to constituent associations that the subject be taken up by their respective boards of directors or in conventions, to the end that dealers in all of the states represented may be protected by similar laws.

In conclusion, I wish to make due acknowledgment of the valuable assistance and the co-operation I have had from Secretary and General Manager McCullough and Traffic Manager Evans of the National Implement and Vehicle Association. It has been necessary to call upon them frequently for favors.

#### TRI-STATE EXHIBIT

The Tri-State Vehicle and Implement Dealers' Association exhibit was opened October 14, at Cincinnati. Exhibition in Music Hall.

Following is a list of the vehicle exhibitors:

Ahlbrand Carriage Company, Seymour, Ind.—Storm buggies, auto seat buggies, plain buggies.

American Carriage Company, Cincinnati, O.—Spring wagons, buggies and pony vehicles.

American Wagon Company, Dixon, Ill.—The Melrose convertible wagon bed.

F. A. Ames Company, Owensboro, Ky.—Ames buggies.

H. H. Babcock Company, Watertown, N. Y.—A high grade end spring buggy and a medium grade end spring buggy, both with leather tops; a spindle body and spindle seat runabout, a Concord and a single seat buckboard, on "Happy Thought" gears; a "Caffrey" runabout and a phaeton.

S. E. Bailly & Co., Lancaster, Pa.—Express wagons, delivery wagons, Rockaways and station wagons.

Brown Carriage Company, Cincinnati, O.—Vehicles, including open driving wagons, top buggies, storm buggies and surreys.

Buob & Scheu, Cincinnati, O.—Bow dressing machines, buggy tops, aprons, storm fronts, capes, horse covers, cushions and backs, poles, shafts, wheels, rubber tires.

Colonial Carriage Company, Circleville, O.—Gentleman's driving phaeton, runabout, storm buggy and two Kentucky specials.

Columbus Buggy Company, Columbus, O.—Horse-drawn vehicles, including a gentleman's driving wagon, top buggy and phaeton; electric coupe, Firestone-Columbus touring car.

Continental Carriage Company, Cincinnati, O.—Eight styles of 1913 vehicles, including buggies, runabouts and surrey.

Wm. Cron Sons Company, Celina, O.—Buggies especially designed for Kentucky and Tennessee trade; closed top buggy, intended for livery trade in the south; slide door storm buggy, triple panel auto seat buggies and double panel auto seat buggy.

Deal Buggy Company, Jonesville, Mich.—Delivery and spring wagons.

John Deere Plow Company, Indianapolis, Ind.—Will exhibit

goods manufactured by companies: John Deere Wagon Company, farm wagons and trucks; Velie Carriage Company, Velie eastern style of wrought iron vehicles; Davenport Wagon Company, Davenport steel roller-bearing wagons, and a full line of John Deere eastern style vehicles.

Durant-Dort Carriage Company, Flint, Mich.—Top buggies, surreys, driving wagons and delivery wagons.

Eagle Carriage Company, Cincinnati, O.—Pony runabouts and traps.

Eckhart Carriage Company, Auburn, Ind.—Kentucky buggies, young men's special driving buggy and a storm buggy.

Enterprise Carriage Mfg. Company, Miamisburg, O.—Closed buggies, both panel and curtain jobs; triple panel auto seat buggies, double panel auto seat buggies and a Moyer side spring buggy.

T. T. Haydock Carriage Company, Cincinnati, O.—Runabouts, top buggies, auto seat buggies, surreys, auto seat surreys, phaetons and storm buggies.

Hickory Carriage Company, Cincinnati, O.—Twelve vehicles of different styles.

Holcker Bros. Buggy Company, Crestline, O.—Buggies and driving wagons, including styles especially designed for southern trade.

Houghton Sulky Company, Marion, O.—Kentucky special top buggy with Kentucky boot; New York driving wagon; three-quarter runabout with square panel seat; break cart; Faultless road cart; two miniature jobs, sulky and training cart, one-eighth standard size.

Imperial Automobile Company, Jackson, Mich.—Imperial model "44" touring car, Imperial model "34" touring car, Imperial model "33" roadster.

Jewel Carriage Company, Cincinnati, O.—Buggies, surreys and phaetons.

Kentucky Wagon Mfg. Company, Louisville, Ky.—"Old Hickory" and "Tennessee" farm wagons and "Kentucky" dump wagons.

Martin Carriage Works, York, Pa.—Spring wagon.

Michigan Motor Car Company, Kalamazoo, Mich.—Three automobiles and twelve vehicle novelties.

Owensboro Buggy Company, Owensboro, Ky.—Buggies and other pleasure vehicles.

Owensboro Wagon Co., Owensboro, Ky.—Farm wagons.

Peters Buggy Company, Columbus, O.—Twelve vehicles, including a new style storm buggy.

Phoenix Carriage Company, Cincinnati, O.—Six vehicles.

Pilot Motor Car Company, Richmond, Ind.—1913 Pilot "40."

Poste Bros. Buggy Company, Columbus, O.—Park stanhop, driving wagon and four buggies.

Queen City Carriage Company, Cincinnati, O.—Runabouts, buggies, surreys, and a line of pony vehicles, which were made a special feature of the exhibit.

Sayers & Scovill Company, Cincinnati, O.—Line of "Young Men's" buggies, including new 1913 auto seat buggy equipped with electric lights and a number of new and original styles.

Seidel Buggy Company, Richmond, Ind.—Open buggies and closed storm buggies.

Standard Cart Company, Aurora, Ind.—Driving carts.

Star Storm Front Company, Troy, O.—The Star line of vehicle storm fronts, rain aprons, wagon aprons, wash aprons, dust hoods, horse covers, stable blankets, automatic whippers, tarpaulins, auto truck tops, auto curtains.

Studebaker Corporation, South Bend, Ind.—Fifty jobs, consisting of buggies, surreys, driving wagons, delivery wagons, farm wagons, dump wagons, spring vehicles for the southern trade, sliding door storm buggy having features not to be found in any other, an entire new line of automobile seats in spring work for central and eastern states.

Thornhill Wagon Co., Lynchburg, Va.—Wagon equipped with triple sideboards bed.

Troy Wagon Works Company, Troy, O.—Troy farm wagons and dump wagons.

Union City Carriage Mfg. Company, Union City, Ind.—Storm buggies.

Banner Buggy Company, St. Louis, Mo.

Columbia Carriage Company, Fostoria, O.

Lion Buggy Company, Cincinnati, O.

Parry Mfg. Company, Indianapolis, Ind.

Ross Carriage Mfg. Company, Union City, Ind.

The Sechler & Co., Cincinnati, O.

## CARRIAGE MAKERS' CLUB ENTERTAINS

The club gave a smoker at the Sinton in Cincinnati to the delegates to the Tri-state Vehicle and Implement Dealers' Association.

J. A. Craig, of Janesville, Wis., spoke on the subject of cost systems. Here are some of his thoughts:

"When the cost system has been thoroughly stamped upon the mind of every dealer in business we will have accomplished a great stroke. I have seen dealers give up the best display room and space they had to a new-fangled implement or vehicle, and to introduce the novelty sold it at a discount, actually losing one or two dollars on every sale, while the articles that meant good profit were probably buried from the sight of the prospective customer.

"We have figured cost as the price we pay for goods. We have not figured the expense of delivery, the expense of selling the article, through salesmen, or the hundred and one other propositions that enter into sale. For instance, we buy a farm implement for \$32.50. We mark it \$40 retail, and yet a close buyer will come in and say that he will give \$38 for the article. Rather than lose the sale we give it to him for \$38. We might as well hand him a dollar or two and keep our goods. We have not figured our own cost and what it costs us to keep salesmen every year. We have not systematized our business sufficiently, and when we do vehicle dealers will not need to go to bed worrying about the small profits of the day's business."

Among the speakers were P. T. Rathbun, secretary of the association; E. I. King, of Logan, Kas.; N. I. Newlin, of Indianapolis; John D. Mansfield, of Flint, Mich. A number of dealers discussed "Actual Buggy Sales," illustrating the right and wrong methods of approach, the quotation of prices and terms, and the closing of a bargain.

## NEW HUB MAKERS' ASSOCIATION

The National Hub Makers' Association began a two days' convention in Louisville, October 23, with President John Obrecht, of Tell City, Ind., in the chair.

The organization is a young one, and only about fifty members were in attendance, but great interest is expected to be taken in it in the next twelve months, and it is believed by the present officers that the next convention will be many times as large.

The convention came to Louisville upon invitation of William Rice, of that city, who, co-operating with the Louisville Convention and Publicity League, will renew his invitation for the convention to return to Louisville next year.

A banquet was served in honor of the visitors at the Louisville Hotel.

## AXLES AND POLITICS

The quarterly sales conference of the Timken Roller Bearing Company and the Timken-Detroit Axle Company was held at Canton, October 15. After the business session and supper, the selling forces repaired to the auditorium where Gov. Johnson spoke. H. H. Timken introduced the speaker. The following Timken men attended: W. R. and H. H. Timken, Heman Ely, E. W. Lewis, P. W. Hood, P. W. Doyle, E. B. Lausier, H. J. Porter, C. E. Gordon and E. A. Walton.

# Paint Shop.

## PAINTING THE 1913 CAR

Unless all signs fail, the automobile painter is to be the man of the hour during the coming year. His importance as a factor in the automobile industry has of late increased enormously. His services have become indispensable. He is recognized as both an artist and as an artisan. In handling the new styles and designs of automobiles which the coming year promises to disclose, his work will be more critically examined and studied than ever before.

Finer colors are to be employed in larger variety. New surface treatment, therefore, must follow. A higher grade of finishing will be called for. Other details scarcely less important will demand attention, so that, taken all in all, the selling value of the 1913 car is largely in the hands of the painter.

Quicker systems of putting the car through the paint shop—speaking now of both new and old work—are now in vogue. Pure raw linseed oil and white lead were for many years pronounced the invincible mediums through which the best and finest class of painting could be developed. Oil was pronounced by no less an authority than Dr. Dudley, late chemist of the Pennsylvania Railroad, as the life of the paint. It is largely, and with reason, so regarded today. But there has been a readjustment of the quantity used. A new order of pigment and oil combination has come into being. It has been found that with a reduced quantity of both oil and lead, the demand for quicker results, without sacrificing a necessary measure of durability, may be well satisfied.

The use of metal bodies for automobiles has served to develop quick ways of painting and finishing such surfaces. Less oil as a binder for the primary coatings is one of the time-saving items connected with the painting of the aluminum or sheet steel body. The oven, or drying room, which is coming to be an important adjunct of the automobile paint shop, is also serving to facilitate and quicken the system of painting. These rooms need not be classed as ovens or hot rooms. Correctly they are drying rooms. They are, first, close rooms from which, except during periods of ventilation, the outside air is excluded, and into which it is possible to introduce a volume of dry, hot air sufficient to hasten the drying of all paint and varnish mediums. This is the main mission of the drying room. There are heating or drying ovens in use which at a temperature varying from 125 degrees to 300 degrees practically bake the paints and varnishes onto the surface.

With the simple heating or drying room, conditions and results are so modified that no doubt need be entertained as to the outcome of the work produced by the quicker method. The drying room merely expels the major portion of the naturally prevailing moisture through the introduction of the dry, warm air, making it possible to get any part of a coat of paint or varnish dry in a comparatively short time.

In the automobile paint shop efficiency has been increased by making specialists of the men.

For roadsters and the lighter weight touring cars the lakes of dark, rich shades are to be popular. What may be known as Manhattan red promises to be a favorite. It is a vivid but beautiful red and is produced by first mixing two parts Indian red with one part English vermilion, reducing with pure turpentine, and applying to the surface. Over this ground apply two coats of No. 40 carmine, using for the second coat  $\frac{1}{2}$  ounce of carmine in a full pint of elastic rubbing varnish. Empire State red is produced by mixing one part No. 40 carmine with two parts English vermilion. Lay this combination over a peachblow color. For the second coat of the red mix  $\frac{3}{4}$  ounce of the pigment in one pint of varnish. Either one of the above

colors appear to fine advantage if striped with lines of gold and black, or simply with lines of black.

Motor car red may be made by glazing the Empire State red with No. 40 carmine, which heightens and intensifies the effect. Of the lakes pure and simple, there are three or four which are about certain to get the popular vote. These are purple, scarlet, crimson and Munich lake. They require fine surfaces and perfect ground or preparatory colors.

The scarlet lake is seen best over a ground of English vermilion. Munich lake may be used over a deep wine color, and crimson lake needs a deep red ground color. A plain black ground is about right for purple lake. All the lakes require a delicacy of treatment not usually applied to the less transparent pigments. Surfaces cannot well be too nice for them, and the greatest care must be exercised in bringing the colors along until they are finally safe under varnish.

Deep, rich greens and blues are to lead during the coming year as panel colors for the heavier type of car. In this prolific family of colors the old favorites remain sure and steadfast in the affections of the car users. Brewster, Merrimac, Quaker and olive green are really as beautiful as any of the greens can well be. They are strong and permanent colors and under attractive striping colors, such as gold, black, ivory white and carmine, they are unsurpassed.

Ultramarine blue, transparent, but rich in color, requires a very good ground for best display. Dark brown or plain black are, in fact, exceedingly good colors over which to coat the ultramarine blue. Blues are colors hard to develop in the full purity of their original shade, it is stated in *The Automobile*. Clear rubbing varnish applied over blue practically ruins its color purity. Over the blue, as developed on the surface, apply two coats of rubbing varnish, for good work, using a couple of ounces of blue to each pint of varnish. By this practice the tone and purity of the color are maintained. Rub these coats with flour pumicestone and water and put the finishing coat of varnish directly over this. In this way magnificent blue surfaces have been turned out of New York, Philadelphia and Boston paint shops for some time past.

Automobile buyers may also with profit study the charms of Richelieu, automobile, Twentieth Century, and cobalt and royal blue. Russian body blue offers something unusually fine for touring car panels.

Then there are the automobile, battleship, cadet, Howard and Hudson gray—handsome, cool, clean and effective.

## TESTING LINSEED OIL

The testing of substitutes for linseed oil or paint oils is easier for the observing painter, but the tests to be of practical value require a few days' time for observation. A painter buying paint oils can afford to watch the tests for a few days, because the difference in price is large enough to warrant the allowance of a little time for the tests.

The necessities for the tests are a sheet of glass, and a small pot, also some pure white lead which must be ground in pure linseed oil.

It must be remembered that there are manufacturers who palm off almost anything as a paint oil, when the price of linseed oil is prohibitive, and there are other manufacturers who work conscientiously to perfect a really useful article to satisfy the need and demands for a cheaper article suitable for certain classes of work.

The first test for paint oil would be to fill a long white glass tube or bottle. By looking downward into the bottle, the oil must appear clear, without a bloom or bluish cast. If such is

noticeable it will indicate an overdose of mineral or petroleum oils, and such oil should be rejected.

To test these oils by tasting, and finding the taste to be of petroleum origin, it would be unfair to reject such oils on that account, because in the majority of them a quantity of substitute turpentine is used as a reducer.

The oil in the bottle should appear clear and not show a sediment after long standing. A dark reddish brown color of the oil is objectionable.

The oil should not ignite on placing a lighted match near it, as it would prove that too large a quantity of benzine has been used in the compounding. This is only a test for safety, as in some cases a good paint oil may contain a quantity of

eration the time it requires to harden the skin, or how long it will keep elastic.

Should no skin at all form, after several days' standing, the oil is useless.—The Painters' Magazine.

### COST OF PAINTING CARRIAGES AND BUGGIES IN A COUNTRY CARRIAGE SHOP

In a former article the writer has told what it costs some builders of a fine class of buggies to paint their vehicles.

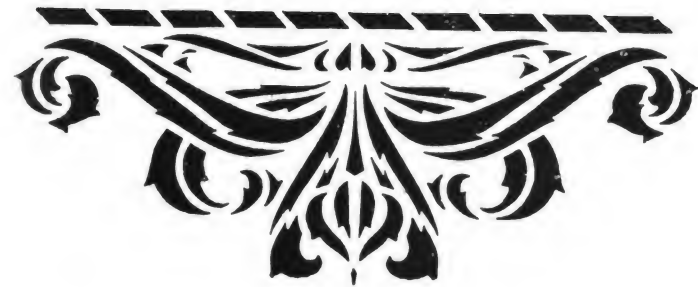
These manufacturers were located in labor centers where piece work prices prevailed and modern methods for handling the work were in use. Racks for wheels, gears, shafts, bodies and seats were installed, and many of the factories were equipped with racks for revolving freshly varnished wheels.

The various processes through which each part passed were timed with a view to expedite the work and lower the cost.

Factories situated where skilled labor is plentiful have many advantages over the concerns that are located in villages and country towns. The attractions in the larger places are so many and so cheap that they appeal to young men and the families of the older mechanics. With the exception of house rent everything else is much cheaper, and many workers will not object to being crowded in tenements and apartment houses if their love for pleasure can be gratified.

The little town with its meagre list of amusements soon palls upon the critical taste of the vigorous, healthy city mechanic, who looks with impatience and contempt on the rural citizen and his provincial attitude toward things that the average healthy young man considers essential to life and his pursuit of happiness.

Therefore it is impossible to supply a factory located in a small place with a class of labor which has had experience in the best and most up-to-date concerns. Where workmen have to be drawn from the native population surrounding a village the size of a carriage factory will never assume large proportions. The source of supply will always operate as a drag and control the output unless one manufactures a very cheap class



other highly volatile liquids, which have been used to more properly combine the ingredients.

Another test is made on a sheet of glass. Pour some of the oil over the glass, and raising the glass to a vertical position, let it run off. At the same time take notice of the action in running which must be even and smooth, but a quantity of the oil must remain on the glass, to prove its sufficiency in body, and its adhesive quantities, which will be shown by a film after drying.

The oil should dry fairly well within between twenty-four and forty-eight hours and a fair allowance must be made for weather or temperature conditions. If the oil does not show sufficient drying qualities you are better off to reject it without going further in the test. After a film is formed, if a greasy substance should still be apparent on the surface, you also want to keep from using it, as it shows an overdose of mineral, paraffine or other non-drying oils.

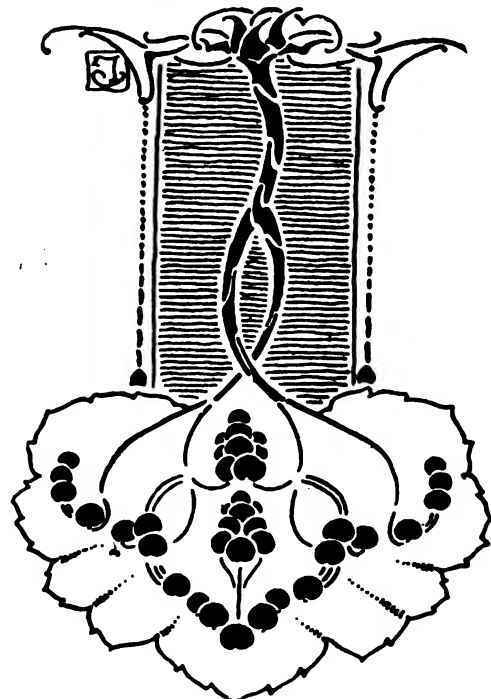
A too fast drying of the oil, showing a hard brittle surface, imparts the fact that rosin is the main ingredient, and such is not in conformity with a good paint oil. Should the film, as formed, be of such a character, rub briskly over it with the tip of your index or middle finger and, as a rule, you can rub the rosin out of it in a fine powder.

A good film, showing elasticity, would prove a fair material which could safely be used. Another test for paint oils is made with pure white lead ground in pure linseed oil as follows:

Mix about a pint of oil with the necessary quantity of lead to form a ready-mixed paint.

Should the mixture be discolored, that is, should it show a reddish brown tint, you may be assured that an overdose of strong lead or other cheap drier has been used, and that those driers, not alone will eat the life out of the paint, but also will change or destroy the delicate color used for tinting. A fair light cream color as a discoloration is permissible in this test.

If you permit the mixture to stand a day, and you find it has thickened and becomes cheesy, or livers up, it will show that much rosin has been used in the compounding. Livering, or curdling, will prove the presence of tar oils, which do not combine with linseed or other vegetable oils. To continue the test allow the mixture to stand a few days to permit the oil to draw to the top and the lead to settle. A skin will be formed over the oil. The skin, as formed, must be of an elastic nature; that is, it must give to the touch of the fingers. Should it be hard and brittle, and on touching it break into short irregular pieces, the oil should be rejected as being unfit for use. If you allow the mixture to stand for a longer time, you can form your own opinion regarding the quality of the oil, taking in consid-



of work where the horny-handed farmer can step in and hold down a job without previous training.

There are, however, notable exceptions to this general rule. The writer has in mind three factories located in small country towns that have earned an enviable reputation for building work that measures up to the standard indicated by my de-



scription in another article in this journal of the product of two concerns situated in labor centers.

Selecting one country factory whose vehicles have for the last twenty years been rolling through the length and breadth of over half a dozen states, I will give the cost of painting, which will serve to show that while the factories located in labor centers have many advantages, this one in the rural districts is blessed with compensating benefits which help to equalize matters.

If the reader recalls the article referred to he will remember that the selling price was from \$60 to \$125 for open and \$70 to \$200 for top buggies, and the cost of painting each job was \$6.07 in one factory and \$6.50 for a somewhat similar looking job in the other. The wholesale price of the work turned out by the country factory is the same as that quoted by the larger city concerns. The cost of painting, however, is considerably less, a piano body and panel seat, labor and material included, costs 90 cents. The gear complete with wheels and shafts \$2.18, making \$3.08 for the buggy.

This factory builds a line of fine carriages, four and six passenger surries and cabriolets, and eight, ten and twelve passenger wagonettes and omnibuses. The cost of painting, labor and material included, four and six passenger surries and cabriolets, which wholesale for \$140 to \$250 averages \$5 each. Wagonettes and omnibuses that sell to the trade for \$260 and \$280, and \$375 to \$420, cost for painting from \$9 to \$16 each.

The capacity of this factory is 4,500 vehicles annually. The class of work manufactured and the small quantity, comparatively speaking, permits this company to handle its work in the processes of building in the old fashioned and careful manner that prevails in the high grade custom shops, but which is now, and has been for many years, abolished in the factories that build cheap and medium grade work for the reason that space commands a premium where very large quantities are handled, and finger marks and a generous amount of specks on the work are not considered a hanging crime.

In this country factory, instead of painting the gears and wheels separately, they are assembled in the gear room after they are primed, the work is painted to order, and finished with wheels on the job. Any defects in the set of the axles or axle boxes and any imperfections in the wheels or gears are remedied immediately; all parts pass a very rigid inspection, nothing is allowed to go through that is not perfect in every respect.

Fifteen finished heavy and light carriages and buggy gears are landed from the third to the hanging-up room on the first floor by an inclined stairway in just seven minutes after the whistle blows every morning. This plan, when it can be employed, saves a great amount of time and extra help for handling both in process of painting and after the work is finished, and makes it possible to turn out a much better and cleaner looking job free from finger marks and scratches.

The cost is reduced, the output is increased and the buyer gets practically a custom made job, as the work is built to order only.

### THE FINISH ON THE HOOD AND FENDERS

Every manufacturer, every dealer, every owner knows that the finish of a motor car, when in perfect condition, is one of its most attractive features, that when finished with a first class automobile body varnish, the body of the car goes through the season in good shape.

He also knows that until now the finish on the chassis has only lasted in perfect condition a few weeks or at most a few months.

The fact is that there has been no finish for the chassis which would stand up under the hard conditions it must meet and the severe treatment it must receive.

Mud, road oil and grease on the running gear—rain and engine oil on the heated hood—excessive vibration, extreme

exposure, and ill usage of all kinds on the fenders—above all the soapy water wash down to which the whole chassis is regularly subjected inevitably kill the lustre of any varnish until now used for this purpose.

There is nothing new in this statement. It is a universal experience.

Valentine & Company, whose researches with new materials and new methods has been one of the features of the American varnish industry from the beginning, have put on the market a new varnish—Vanadium Chassis Finishing—which they claim to be resistant to the action of soapy, muddy water, road oil, grease, lime, etc. They are sending out small samples of this varnish to any one in the trade who writes for them.

### ENAMELLING

The metal body and other metal parts of the motor car have introduced baking processes into the paint shop in an extensive way.

A way to easily enamel mud guards is described by a writer after this fashion. The only parts of a car that can be stove enamelled are the mud guards, and then only when they are finished in black. When such is the case proceed as follows: If the guards have been previously painted, burn off thoroughly. In the case of new guards, rub the surface with rag dipped in raw oil, then rub with emery cloth to remove dirt and rust. Next wipe dry with clean rags and apply the first coat of black. Some makers put up the first coating black under the name of metal priming. This is an excellent article, and is applied with a camel hair brush in the same manner as quick black, which it closely resembles. This priming requires close-stoving for two hours at 200 degrees. If time is short, stove at 300 for one hour. Other makers put up a first coating black that closely resembles black Japan of a rather dirty color. This is equally as good as the metal priming, with these advantages: it is fuller bodied, dries with a gloss, and helps to fill up the surface much better than the metal priming. This must be applied with a flat varnish brush and stoved for two hours at 270. When stoved sufficiently, turn off stove, open the doors, and allow to cool off. When cold, examine the work and with fine sandpaper remove any nibs; then give the whole surface a good rub with curled hair, dust off, and apply the first coat of finishing black. For finishing coats use the varnish brush. A separate set of brushes should be kept also for finishing black, as the first coating or metal priming is of a very dirty color.

Apply this first coat of finishing black in the same way as you would a coat of ordinary black Japan. Apply a thin coat, brushing it out well; otherwise it is liable to run. Stove this for three hours at 300. When stoved and cooled off, flat down in the ordinary way with pumice stone, wash off, and apply a second coat of finishing black. If the panels are in good order when first received, this coat should be the finishing coat and be applied as carefully as you would the finishing coat of varnish. Stove this the same as the previous coat, and, when cooled off, put on any lines that are necessary, using either quick or oil color for the purpose. All lines should be pencil varnished and stoved for one hour at 120.

### THE LAKE COLORS

These are very various in color, and are semi-transparent; they are chiefly used as a glaze to increase the richness of the color. Thus we have scarlet lake, crimson lake, and purple lake. The first often mixed with vermilion, the other two used to produce the color called lake, either by mixing with maroon, japan brown, or by painting as a glaze over these colors.

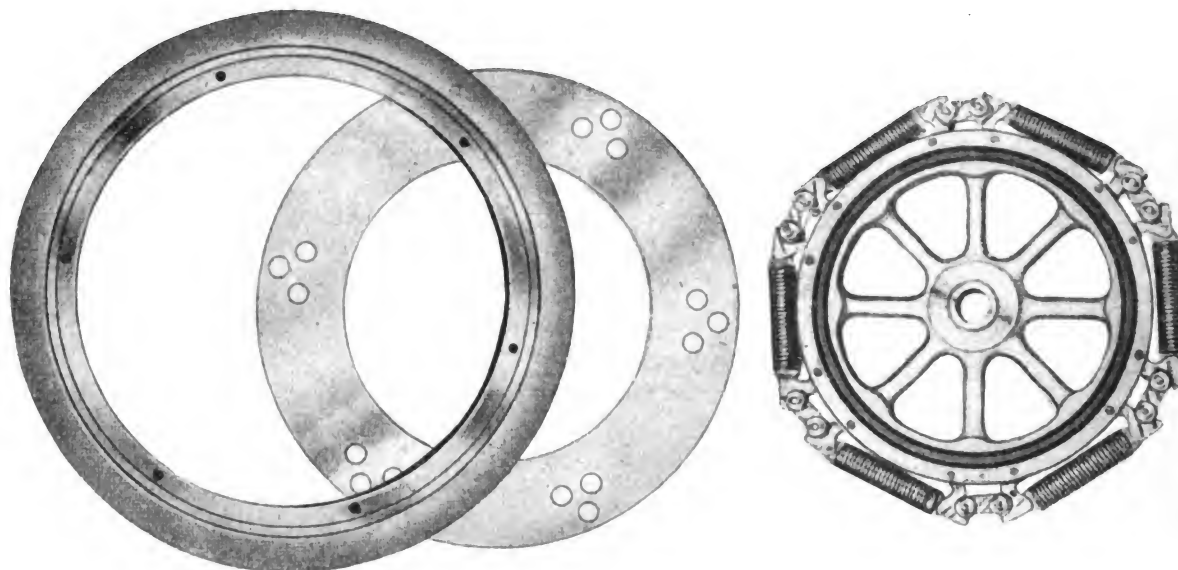
Rose pink is another pigment of the same nature, but not so good.

# Rubber Department

## RESILIENT WHEELS WITHOUT AIR

Here is an English idea that is being put in service, of which good words are spoken. They are said to run very steady on uneven surfaces. The cost is not high.

Our illustrations show the essential elements of the wheels. That on the left shows the outer rim, with rubber tire, and the guard plate. The inside of the rim is formed in the shape of a channel, like the lower half of the letter H. The center part has an ordinary artillery-type wheel of wood and metal, and the sole is shaped as a steel channel like the upper half of the letter H. To this channel is fitted a series of projections fashioned like the head and neck of a duck. They are pivoted at the end of the neck and are in pairs facing one another. The crest of each head is linked to another head with a telescopic sleeve, which carries a helical spring, and in between each pair of projections are placed a pair of twin rollers or distance pieces, which operate on the curved part of the throat and neck. The rollers are secured to the side plates by steel bolts passing through from side to side. Each pair of projections is at an equal distance apart, and the springs



are of equal length and strength. The guard plates of the floating rim overlap, and are free to slide on each side of the wheel center. By this arrangement, any sudden jerk or movement of the outer or floating rim operates through the twin rollers, and tends to force every one of the projections to turn on its pivot and away from its corresponding roller, thereby putting all the springs under compression equally and simultaneously. The weight of the vehicle is distributed over all the springs. The right hand illustration shows the center portion complete with the arrangement of telescopic sleeves and helical springs in position.

## ABOUT SYNTHETIC RUBBER, BY AN ORIGINATOR

The production of synthetic rubber is one of the greatest successes, and yet it was one of the most difficult problems of the chemical industry. I am proud of the fact that its production was successfully accomplished in the works at Elber-

feld, and that I was able to follow every stage of this important discovery. Perhaps you would be interested to hear how the whole thing happened, especially as much that is misleading has appeared in the press.

"Caoutchouc made from the milky sap of numerous species of trees and shrubs and the grotesquely formed lianas by various coagulation processes, on being suitably treated with sulphur or sulphur compounds, i. e., by vulcanization, acquires its valuable and characteristic properties. The synthetic method took quite a different route. The very complex molecule which rubber doubtless possesses was broken up by heat, i. e., by dry distillation, into a maze of all kinds of gases, oils and resins. A colorless fluid resembling benzine, to which the investigators gave the name "Isoprene," was also obtained. Bouchardat, in France, first expressed the belief that this isoprene, obtained in very small quantities, and in an impure form by the dry distillation of caoutchouc, might be closely and intimately related to caoutchouc itself. As far back as the eighties, the Englishman Tilden claimed to have prepared artificial rubber from isoprene by treatment with hydrochloric acid. Tilden, though he worked strenuously for years, did not succeed in

repeating the experiments. Other investigators were likewise unable to confirm the results. Dr. Fritz Hofmann, of Elberfeld, in 1909 succeeded in polymerizing the isoprene molecules into the complex rubber molecule. Somewhat later Harris discovered independently another method of arriving at the same result. Everyone is now in a position to repeat this exceedingly simple experiment himself, but in order to obtain Hofmann's results it is necessary to employ pure isoprene.

The practical value of this rubber, of which many samples have been made, has been tested by the highest authorities in this branch of the industry, while Harries, whose labors extending over many years, prepared the soil for Hofmann's synthesis, has carefully examined the chemical constitution of the substance.

The matter appears very simple, intelligible and clear, but the difficulties which have been overcome were great indeed, and those which still remain to be surmounted, in order to produce a substance equal to Para rubber in quality and capable of competing with cheap plantation rubber costing only 25 cents per pound, are still greater. The end in view is this:

that artificial rubber may soon play as important a role in the markets of the world as does natural rubber.

I have employed articles made of synthetic rubber, and for some time have used automobile tires made of this material. Yet, if you ask me to answer you honestly and truly when synthetic rubber will bring the millions which prophets see in its exploitation, I must reply that I do not know. Surely not in the immediate future, although synthetic rubber will certainly appear on the market in a very short time.

### SYNTHETIC TIRES

An editorial in *India Rubber World* says in September Americans took their first view of actual automobile tires made from genuine synthetic rubber. It was on the occasion of Dr. Duisberg's lecture before the chemists, and he illustrated the progress the Germans had made in the production of synthetic rubber by rolling out before the audience a set of tires constructed of rubber made in Germany—rubber which was innocent alike of plantation parentage and Amazonian ancestry. Moreover, these tires had not only been on actual wheels, but had carried an auto of weight and proportions 4,000 miles, and were still intact and unpunctured, and in fact apparently little worn, and full of promise for a few thousand miles more.

But the makers using the orthodox material that comes from Para need not feel undue alarm, for there are only two sets of these synthetic tires in existence—the set the doctor exhibits and another set that were presented not long since to the Kaiser. Just what these two sets of tires cost, probably not even Dr. Duisberg himself could accurately state, but reflecting that the German chemists started out five years ago on this synthetic quest, and purposed to spend 1,000,000 marks a year on it, and further reflecting that these eight tires represent practically the only tangible and utilizable fruits of their efforts—apart of course from their great scientific value—it is obvious that they have come rather high. The doctor does not expect to see synthetic tires on next year's output of autos. He is modest, and inclined to be patient. "Synthetic rubber," he says, "will surely not appear on the market in the immediate future; but I, for one, hope to live long enough to see art triumph over nature also in this industry."

### RUBBER SYNDICATE

Consul Pickerell, Para, says final arrangements have been concluded between the Bank of Brazil and the parties interested in and forming the syndicate organized in 1910 to increase the price of rubber, whereby the latter will, under conditions as yet unknown, take charge of and dispose of same. The amount of rubber held by the Bank of Brazil as collateral for money advanced to finance the aforementioned scheme is 2,400 tons. I am informed that it is the present intention of the directors in charge of this liquidation to dispose of this rubber to bona fide manufacturers only, hoping in this way to avoid manipulation by dealers who might be interested in affecting the price of the coming crop. I am further informed that the rubber is only to be sold and shipped from here, as its storage in either London, Liverpool, or New York might have the effect of depressing present prices. This rubber is all of first quality, being bone-dry, and should on its merits command a higher price than new rubber.

### RUBBER PRODUCTION AND PRICE

The world's production for 1913 is estimated as follows: South America, 39,000 tons; plantation, 28,500 tons; Africa, 15,000 tons; Central America, 5,000 tons; Assam, Rangoon, Borneo, etc., 2,500 tons; and other sources, 1,000 tons; total, 91,000 tons. The probable consumption is 103,000, of which, for America, 47,600 tons; United Kingdom, 15,000 tons; Ger-

many, 15,000 tons; France, 10,000 tons; Russia, 7,000 tons; Belgium, 1,500 tons; and the other countries, 7,000 tons.

At the close of June this year the stocks showed a decrease of about 4,000 tons compared with the previous year; and the total visible supply is now 9,000 tons, of which 2,200 tons are being held up by a syndicate in Para. Prices have moved as follows during the last five years: In 1907-8, at the time of the American crisis, 83 cents per pound; 1908-9, \$1.18; 1909-10, \$2.17; 1910-11, \$1.54; 1911-12, estimated at \$1.11; the current quotation is nearly \$1.21. Figures of production and consumption justify a higher price for rubber than is at present ruling, and if the English and Continental manufacturers are not careful the Americans are going to get them short. They have had them short, as a rule, before, and they will have them again.

### NEW SOLID TIRE KINK

Solid tires perforated with radial holes of nearly one inch diameter are known. A French firm inserts a short corrugated steel tube in each of the holes of such a tire, the corrugations being formed with a saw-tooth cross-section so that the tubes can be driven farther into the rubber but cannot fall out. As soon as they reach the rim, by reason of the rubber wearing down, the lack of elasticity in the tire becomes a signal that its replacement is in order. The rings work as anti-skid rivets or better, filling up with gravel and other road material and having no tendency to eject it, as they are not in themselves elastic.

### SWINEHART COMPANY EXPECTS TO PRODUCE TIRES IN ST. LOUIS

Reports that the Swinehart Tire & Rubber Co., of Akron, O., was making ready to locate a plant in St. Louis, Mo., and which emphatically and authoritatively have been denied, have been followed by the incorporation of the St. Louis Tire & Rubber Co., in which J. A. Swinehart, formerly of Akron, is the chief stockholder. He, however, absolutely has no connection with the Swinehart Company and the Missouri project is in no way identified or associated with the latter.

The St. Louis Tire & Rubber Co. is capitalized at \$150,000, of which \$59,100 is represented by Swinehart's patents and a contract executed with him. The remainder of the shares represent cash subscriptions. Swinehart is the principal stockholder, holding 900 shares. The other six, with Swinehart, constitute the board of directors, each of whom holds 100 shares. They are Harry C. Barker, C. M. Skinner, Webster Groves, Alfred C. Einstein, William H. Glasgow, Roy F. Britton and C. C. Collins, all of St. Louis.

### NO CHANGE IN THE WORK

The Atlas Engine Works, of Indianapolis, has been sold at receivers' sale to the Lyons-Atlas Company, organized by Chicago interests for the purpose of bidding in the plant. Under the terms of sale the common stockholders and Hugh H. Hanna, former president of the company, who indorsed the notes of the concern for several hundred thousand dollars, will receive nothing.

The new owners agree to pay \$441,000 interest due on the \$1,500,000 bond issue, \$105,000 on judgments and \$80,000 for the expenses of the receivership. The manufacture of Diesel oil burning engines and Knight motors will be continued.

### TO MAKE WAGON STOCK

The Carter Lumber Company, of Cairo, Ill., has built two mills near Raysville, La., to manufacture wagon and dimension stock. The southern buying office of the concern has been moved to Kaysville and is in charge of C. C. Carter as manager. M. S. Carter is manager of the main office at Cairo, Ill. The output of the mills will be shipped to the latter point, where it is manufactured into finished condition.

## Smith Shop.

### WORM GEARS APPLIED TO REAR AXLES

F. Burgess on "Worm and Helical Gears as Applied to Rear Axles," struck a responsive chord in many listeners in a paper which he recently read before the Automobile Board of Trade and which is in part as follows:

European practice, for 15 years, has given evidence of the success of the helical type of gearing. In the near future a large percentage of the cars in the United States will be equipped with this drive. Mileage records of 50,000 to 124,000 have been established.

Regarding the terms worm, helical and spiral I would say that spiral gear is the term commonly given to a gear the teeth of which have a uniform twist parallel to the axis, although for technical correctness the word helical should be used instead of spiral.

As the term right-angle helical is not as convenient as the term worm gear, I would suggest the term helical gears as most appropriate. Otherwise it would be better to use the general term worm or worm gear to include all reduction ratios, even as low as 1-1.

During the past twenty years great strides have been made in the development of helical gears. The adoption of these gears for parallel and right-angular drives has made practically a new element in machine design. Until this form of gearing was made commercial by the invention of special machinery suitable for economical production, there was considerable reluctance on the part of the manufacturers to adopt the helical gear.

The principal reason for the adoption of the helical form of tooth appears to be its peculiar quality of silence, regardless of speed or load. With the best methods of design and assembly, great durability, strength and efficiency are obtained.

I believe that on all styles of cars in the United States the worm gear could be used successfully for rear axle purposes.

The successful worm gear should embody the following qualifications: Cheapness of construction, strength for resisting shocks, hardened and smooth surfaces for durability, material of a suitable composition to reduce friction, simplicity of construction and mounting, perfect bearing condition, noiselessness at any speed or load, reversibility, lightness in weight, efficiency in power transmission.

Granting that there is some argument against the worm in regard to trucks as to the dead axle proposition, this could be overcome by using the worm gear on each end of the axle, the same as sprocket wheels, having a double worm gear drive in place of the cumbersome chain drive. If at first slightly more expensive than the chain and sprocket drive, less repairs will more than make up the difference.

Considerable discussion has arisen in regard to the relative merit of the straight and Hindley types, the latter having been first used by Hindley, of York, England. In my opinion both can be used successfully, although each has its own advantages and disadvantages. For most purposes, particularly where considerable power is to be transmitted, the Hindley has the advantage, but with ordinary machinery it is somewhat more difficult to obtain the same degree of accuracy that can be obtained in the case of the straight type.

From tests made there is no question but that there is a larger bearing surface on the Hindley type of worm than on the straight. Therefore this type of gearing will for the same pitch present a bearing of greater durability and manifestly wear less than the straight type, particularly under heavy load.

With first class bearings the Hindley type has the advantage,

as a smaller and lighter gear can be used, thus reducing expense, especially if made up in large quantities.

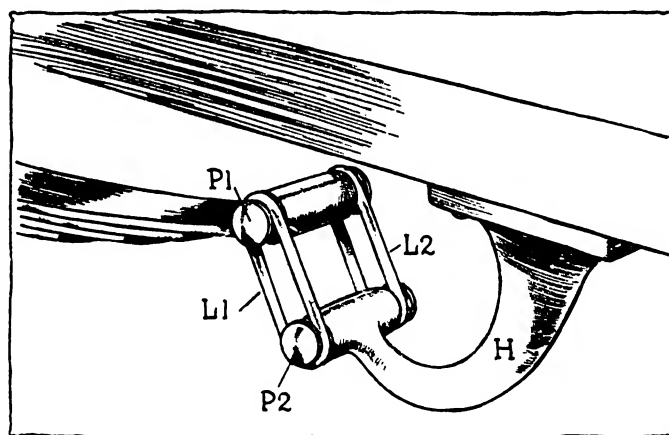
The hardening process for the worm should be such as to cause the least amount of distortion, careful methods of heat treatment being employed. The gear should have a mirror-like polish.

The worm gear should be made of a special mixture of hard bronze. The gear should be slightly polished after being cut to insure a perfectly smooth glazed surface to mesh with the hardened polished worm. This set of gears, properly housed, with ball bearings and the right lubricant used, will give an efficiency of at least 90 to 95 per cent.

A simple method of testing the gears for efficiency without elaborate apparatus is to run them in their regular housing, containing a bath of oil, subjected to load to be transmitted. If they do not have a high temperature after running several hours they indicate high efficiency and suitability for the given purpose.

### GERMAN SYSTEM TO INSURE GOOD SPRINGS

The easy riding qualities of German railway cars make it desirable to look for the reason. The springs are responsible. They are flat springs, relatively wide, and sufficient plates are used, considering width, to make the section rectangular. In a word, a spring with a 5-inch width of plates has sufficient plates to bring the other dimensions up to five inches also.



The same rule holds for other sizes of plates. The springs are made of long span with very little bow or camber.

The novel point in the detail of suspension is that the mechanism used for linking the spring to its hanger H at each end is composed of a pair of links of a chain. They are sprung into grooves in the pins. One pin P1 passes through the eye of the spring, and the other pin P2 passes through the bore of the suspender. The links L1 and L2 are held in place by the pressure of the spring. This plan might be refined for use in automobile trucks.

### PLANETARY GEAR OF NEW TYPE

With a view to the problem of driving motor vehicles—for example, municipal garbage collection vehicles—very slowly and with many stops and yet economically, it is necessary that the power used should be very small and adapted for working at high speed, so that the vehicle may not be exposed to great stresses and may be built cheaply, and it is at the same time necessary that the power taken from the high-speed shaft of

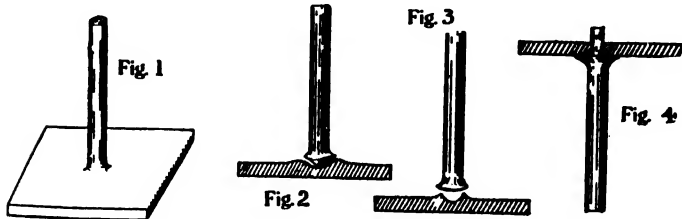
the little motor shall be geared down to a very slow motion of the driving wheels without encumbering the vehicle with a large and power-consuming gear box and without a multiplicity of gear reductions at various points, all of which would mean increased first cost, waste of power, wear of a number of parts and difficulties in keeping the vehicle in good repair.

Consideration of this long-felt want has led in Germany to the development of a new type of planetary gear of remarkable design and mechanical properties. It is stated that reductions of as low as 2 to 1 may be obtained.

### SOME WELDS

Every carriage smith is up to the hour on welds, but some of the boys might find it convenient to store away a little more information on the subject, and a writer in the Australian Coachbuilder explains and illustrates pump welds very satisfactorily, so we are glad to give our readers the benefit of what he has to say.

An ordinary jump weld is easy enough for an ordinary job, but for a piece of iron work which has to stand a good strain it is a different thing. Say Fig. 1 is a piece of iron about 3x1 inch, with a piece of 1-inch round jumped on to it. The first thing to do is to upset the bar as in Fig. 2, and sink well



in with a bob punch. Now upset the round piece and scarf in a bolster to the shape shown in Fig. 2. This round piece should be scarfed, so that when both are taken out of the fire at a welding heat the first point of contact is fairly in the middle of the recess; see Fig. 2. The striker gives a few heavy blows on top of the round piece, which welds it first in the middle and at the same time drives any dirt out which may possibly be in the recess. The scarf is now welded in with the fuller and then put into a bolster to finish. Many smiths recess the flat bar and scarf the round piece with a flat face, as in Fig. 3. This is a great mistake, because the edges of the scarf stick and leave the center unwelded; for the simple reason that a certain amount of air is encased in the middle which cannot possibly escape, owing to the scarfs welding in first.

When the round piece is to be welded in the middle of a wide plate of iron, such as material 8x1½ inch, it is a wise plan to punch a hole in the plate and make the round bar the shape shown in Fig. 4. Heat them independently of one another. Place the flat piece in the fire with a small piece



of fire-brick over the hole, which will draw the heat to the desired spot, and when welding place the round piece into a countersunk bolster and put the plate over the top and weld up as quickly as possible, as it is almost impossible to take a second heat on the job without wasting the bar considerably.

If you chance to get two pieces of double shear steel or two old files which have to be welded together, split as shown in Fig. 5 and scarf the points down at the same time bending one up and one down. Now put together as in Fig. 6 and heat slowly to a greasy welding heat, using plenty of borax. It is surprising how easily they can be welded together in this way.

### WHAT CRUCIBLE STEEL FOR AUTOMOBILES MEANS

Crucible steel is melted in a covered pot. This prevents the steel from absorbing nitrogen and other gases. Open hearth or tropenas steel is exposed to the flame and air; being injured by the gases absorbed.

There is no oxidation in the crucible process. No ore is used in this process and no sharp flame can attack the metal. This insures a quiet metal, free from oxide of iron.

No physics or dopes required in crucible steel. The addition of silicon iron, spiegel and ferro-manganese to steel, which are necessary in the open hearth and tropenas process, do nothing but remedy defects in melting.

Crucible steel ingots are more free from pinhole defects. In order to obtain solid steel ingots, especially small ones, it is necessary to have the metal hot enough when poured into a mould to allow the gases created by pouring to work. If the metal is not hot enough to allow this it will cause pinholes, so prevalent in open hearth and tropenas ingots, no matter how good the steel may be when it comes from the furnace.

The crucible process insures the highest heat. When steel is melted by the crucible process it is taken out of the furnace in the same covered pot in which it is melted; the pot being at a white heat is taken immediately to the moulder for pouring. This insures a good heat in the metal when in the mould. In the open hearth and tropenas process the metal after being ready to pour is transferred to a ladle, which is much cooler than the furnace. This causes a great loss of heat; not only on account of the steel coming in contact with the cooler ladle but because it exposes the metal to the atmosphere while running from the furnace to the ladle.

The chemical composition of crucible steel is more uniform. The chemical composition of steel varies with the temperature and the time exposed to the air. The first ingots from the ladle of an open hearth furnace or tropenas convertor are higher in carbon, silicon and manganese than those poured later; caused by the metal being exposed to the air. This is not appreciable in crucible steel.

The small quantity of metal in a pot guarantees better ingots. The high heat of crucible steel and the small quantity contained in a pot guarantee better ingots of a more even composition than is possible in other methods of making steel.

Crucible steels have the highest tensile strength of any carbon steel made.

### FOUR-SPEED TRANSMISSION

It may sound strange to predict that the next radical change in automobile engineering will be the general adoption of the four forward speed transmission, but in my opinion it is bound to become generally used in all good American cars.

Today it is found in this country only in the highest priced cars, says W. H. Cameron, in *Automobile*. Abroad, where special reasons have forced the use of the four-speed transmission in the large majority of cars, its advantages are better understood.

One reason for its use on foreign cars is the extremely small bore of cylinders, due to the fact that the tax is graded by the size of the bore. An American car of more than 4-inch bore is in little demand in England, where a bore of three inches and a fraction is generally used with an extremely long stroke to give the maximum horsepower.

Under such conditions the four-speed transmission is positively essential, both to economize the power and to gain the required flexibility of control. Its use under these conditions, however, only serves to illustrate the actual money saving in fuel and less strain upon the machine, as well as the advantages in driving which will come with the widespread adoption of the four-speed gear box in America. For the same engineering principles apply in our case as in theirs.





Compare the fresh, piquant beauty of a nice girl in a smart rig and the "smelly," anxious atmosphere of an automobile. All the pleasure in life does not lie in hurrying from one place to another in record time. A horse is sometimes a joy.

**If you want to be in the fashion inspect our new stock of:**



While studying comfort in your sleigh you may as well have style. It will cost you no more.

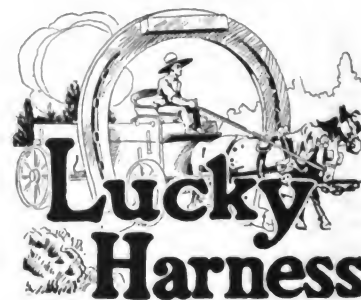
Whether you want us to build you a sleigh to your own specifications or according to the latest style, you can depend on getting a vehicle that has the maximum of comfort combined with greatest taste.

**Suppose we talk it over today—  
the price will please you**

## How to use THE HUB ready-made advertisements

The advertisements shown herewith are in one and two thirteen em columns width. The printer will tell you what that means. It allows you to use those ads in any newspaper, practically, in the country. The cuts at the top of the ads are supplied in both single and double column size. That is, although they may be shown in double column here they will also be supplied in single column. You can make those ads as long as you like. They are shown here in short lengths. It is usual to alter them to suit local conditions and to add lists of articles for sale or special descriptions of your goods. In every case you must put in your name and address.

If there are any questions in your mind regarding the use of those ads drop a letter to this journal and we will give you all the assistance you need. And don't forget that we also maintain a department for getting up all kinds of advertising literature and ideas at a low rate.



All our harness is lucky. It may be that we were born lucky but we have built a reputation for harness that seldom has a defect—is lucky from the day you first use it—reliable, well made, strong, durable harness that pleases you.

**Come in and let us  
show you some of our  
work. You will never  
use any other harness  
once you try ours.**

(Name and address of your  
store in this space)

## THE HUB ADVERTISING SERVICE

Edited By Dundas Henderson

Under the heading of Department of Promotion this feature was commenced in our September issue to supply a long felt want in the trade. It has been an instantaneous success. In fact it has been so warmly welcomed by our readers that a further development is necessary to keep pace with the demand.

While appreciating the help that we are endeavoring to give the trade in teaching them how to make money from the scientific application of advertising, several people have written asking that we give them practical aid. It is suggested that we publish every month two or more advertisements that can be used, with a little alteration, in our subscriber's local advertising.

Following this suggestion we have accordingly decided to open a regular department of advertising service.

Every month we will publish two or more advertisements that any subscriber to this journal can use in his local publicity. Those ads may be used in any way he pleases—in his newspapers, as circulars, or as mailing cards. With each ad there is an illustration. We supply a cut of that illustration for the nominal sum of sixty cents, and mail it free.

Those ads are copyrighted and can be used only with our permission, which must be obtained in writing.

The series will be continued every month and readers will find enough ads to enable them to use one every second week in the year. It is probable that a subscriber may want to have the sole rights of using those ads in his own district, for it will be the reverse of satisfactory to have the same ads used by a rival concern. In that case we are willing to grant the sole rights to use those ads to the subscriber provided he agrees to take the whole series of twenty-six during the year as they are published. But in order that no feeling of being "left out" may exist in the mind of the rival we are willing to supply the rival with a brand new service for his own use. The price for this will be higher than for the published cuts. We aim at being fair to all but must give prior rights to the man who is enterprising enough to make his complete advertising secure in advance.

It is advisable to make application at once before your competitor gets busy. When making this application state the exact district you want to cover and we will tell you how far we can protect you. Cash must be sent monthly, although a

cash discount of two per cent. will be given for cash with order —\$15.60 less 2%.

In addition to supplying these cuts we offer a regular advertising and advisory service to users. We will supply circulars, form letters, special ads, booklets and all kinds of advertising literature to subscribers at a low rate. All you need do is to send us particulars and we will submit a scheme for advertising your business or boosting any special occasion or idea. We take the worry and work off your hands and send you finished plans with full particulars how to use them.

Besides all this I will continue every month my talks to readers on advertising.

Fill up the coupon at the bottom of this page today and beat your competitor to it.

### THE PERCENTAGE OF YOUR INCOME YOU SHOULD SPEND ON ADVERTISING

When a man can be got to admit that advertising is something more than a darned expense, or something less than a miracle from which he is going to make his eternal fortune, he is ready to consider it as a business proposition.

When starting any business proposition your first thought, if you are a business man, is what it will cost. Not only do you ask what will it cost when you commence an advertising campaign, but you ask what will it cost to get certain results. If you merely want to make your business grow on an up-to-date and steady plan you ask what proportion of your income must you spend to get that steady increase.

At this stage in your deliberations enter the questions of the kind of business you want to do, the surroundings of your place of business and a number of other elements that help you to a decision. It is impossible to be an exact guide to you under the circumstances. I would have to know a great many things such as the state of competition, kind of goods manufactured, your ambitions, the kind of service you give your customers, and several other things before I could help. But there are certain rules that apply to all businesses of certain kinds and classes and while there are few statistics to guide one, a fairly accurate general idea may be formed. On that basis I think that a vehicle manufacturer who spends

#### Yearly subscriber's order blank for advertising service

To The Hub,  
24 Murray Street,  
New York City

Date.....

I  
Herewith we enclose Fifteen Dollars Sixty Cents for Twenty-six special vehicle cuts now published and to be published in The Hub during the next twelve months. It is understood that we are to have sole rights of using the cuts in.....

This contract cannot be cancelled. The sending of the cuts shall mean that I have your consent to use the copyright of the illustrations locally in stipulated area, but not beyond.

Accepted for The Hub

Firm Signature.....

by.....

By.....

Address.....

Note—If you are not now a subscriber to The Hub this contract must be accompanied by \$2 for a year's subscription.

less than three per cent. of his total income on advertising is not taking advantage of his business chances.

When you come to consider that the vast majority of those who now consider themselves good advertisers are spending a very small fraction of one per cent. of their income on publicity, you will appreciate that this three per cent. suggestion is likely to cause a sensation.

You must spend money to make money in any kind of business enterprise. And if you are to control the results, as far as it is possible to control them, you must spend it scientifically in fixed proportions. Advertising is meant to sell goods and it is the highest kind of salesmanship as well as the cheapest. It is within the reach of the poorest vehicle man provided he understands and appreciates its use. If your trade is small and growing smaller, you can turn the tide in your favor provided other conditions are equal, by spending the right proportion of your income on advertising. And if your trade is large and growing bigger you can increase its growth faster and make its prestige and good will greater in the same way.

When you have once assimilated the fact that it takes money to make money and that the money used must be spent in fixed proportions—say three per cent. of your total income—then you are ready to consider how to spend that money successfully.

### PRESIDENT NONES MAKES ENCOURAGING REPORT

To give stockholders of the Kentucky Wagon Manufacturing Company, Louisville, Ky., information of the progress of the six months that have passed since the annual meeting, W. C. Nones, president of that concern, is sending out letters in which he declares that since August 1 the company has made a fair profit. He adjures stockholders to hold on to their stock and ignore the present bids around 55 and 60. The book value of the stock on October 1, 1912, he says was 144.70. He says among other things:

"Our position from viewpoint of assets and liabilities is strong. Our thirty-acre plant, covered by substantial buildings and improvements, is not encumbered by a lien of any kind. Our active (liquid) assets are three times the amount of our liabilities."

### 300 PER CENT. DUTY NOT ENOUGH

A deputation of employes of the Federal Spring Works on August 12 asked the Minister of Customs to increase the duty on vehicle wheels to 2½d. per pound. It was stated that the industry was languishing, while ordinary buggy springs were being imported by hundreds of tons, and the outlook was hopeless for those lads who had been put to the trade. If a duty of 300 per cent. was not enough, more should be put on.

Mr. Tudor, in reply, said he had persuaded Parliament to increase the duty on springs last year to 35 and 40 per cent., about the highest duty in the tariff. It was a scandal that an employer should bring men out from England on contract, knowing his trade was a declining one, as stated. He held out no hope for 2½d. per pound, as asked. He would make inquiries into the whole question, and ascertain the full facts.—Australian Coach Builder.

### MANY STEEL TIRES IN EVIDENCE

Serious attempts have been made by French makers to abolish use of rubber tires for commercial vehicles, and in the army competition the use of steel rims gives a decided advantage, for the cost of the wear and tear of tires is estimated by the jury, and this cost must always be lower for steel than for rubber ones. No vehicle came successfully through the trials with steel rims on all four wheels. In a number of cases the front wheels were shod with rubber.

### FEDERAL RUBBER CO. INCREASES CAPITAL

The Federal Rubber Manufacturing Company, of Milwaukee, increased its capital stock from \$1,000,000 to \$2,000,000, the increase consisting of 7 per cent. preferred stock, redeemable at 120.

The increase has been made necessary by the growth of the Federal Company's business in the past year, during which the actual sales have exceeded the estimated sales by \$400,000, and to provide for future expansion.

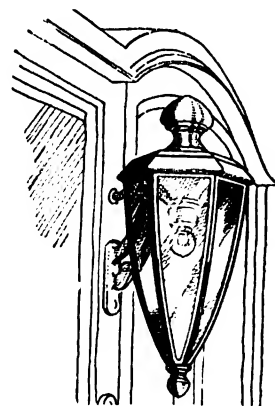
In May last year the Federal Rubber Manufacturing Company purchased the plant of the Federal Rubber Company at Cudahy, since which time the present company has made extensive additions to the plant, practically trebling the floor space of the plant. A modern office building has been erected. The mechanical equipment of the plant is the most complete in the country for manufacture of automobile, motorcycle and bicycle tires, carriage and truck tires, and a full line of mechanical rubber goods.

### CHAMPION WAGON CO. RECEIVERSHIP IS SUCCESSFUL

Pursuant to a call therefor, the creditors of the Champion Wagon Company met at Owego, October 24, to consider the advisability of continuing the receivership for the building of commercial electric vehicles. The Champion Wagon Company went bankrupt last fall and on December 9, 1911, Messrs. Fred C. Hill and Theodore D. Gere were appointed receivers in an involuntary bankruptcy proceeding in the United States District Court. Mr. Gere had been treasurer and general manager of the plant for many years. A large order for wagons was on hand and the creditors were convinced that a good profit could be gained by continuing the plant and filling the orders. This has proved true and the receivers report upwards of \$10,000 in their hands as the result.

### NEW ARRANGEMENT OF ELECTRIC LAMP

Whether the lamp shown in the accompanying sketch will please everyone is a matter of opinion, but it cannot be denied that it is of a form suitable for the electro bulb, and made on lines sufficiently artistic to merit its position on a lady's town carriage.



### THEIR No. 2 CATALOG

The Southern Skein & Foundry Co., Chattanooga, Tenn., has just issued a 52-page catalog that very well illustrates and describes the anvils, bolster plates, drills, and a lot of other smithy tools, as well as a big line of wagon skeins, also tire benders and shrinkers. Get the catalog.

### SPRINGFIELD GETS SATTLEY COMPANY

The Racine-Sattley Company, of Racine, and Springfield, Ill., in which large interest is held by Fred Schwedeman, of St. Louis, who is general manager of the company, has decided to move its entire Racine plant, employing 1,000 men, to Springfield. The move is made because the operation of the new Wisconsin income tax law places the Wisconsin branch under a handicap, as compared with the Illinois plant, and also with competitors in the wagon manufacturing business.

## Influences Which Affect the Cost of Carriage and Buggy Building

By J. F. Montague

Add the cost of the labor and material which is applied upon one of ten, or fifty or more jobs turned out in a day, and the result will be an accurate statement of the expense of painting. Multiply this amount by the number of vehicles finished in twelve months and you will have the cost of the yearly output—on paper.

No matter how well managed the painting department may be, there are a number of unavoidable leaks that will make your expense account look like your adding machine had slipped a couple of cogs, when, at the end of the year, you bulk your labor and material and compute the cost.

In every factory there is allowed a certain percentage for waste paint, varnish, oil and turpentine that in small quantities have adhered to the sides of the kegs, cans and cups, and on account of awkward handling and overflowing of cans when drawing from barrels.

But distinct and apart from this waste of material is the waste of time occasioned by the interruption of a steady flow of gears, bodies, seats, shafts and wheels into the paint shop. And that is not all. Should the trimming department from any cause such as lack of material, inability on account of lack of workmen fail to keep pace with the painting department, the latter is forced to lay off part of the working force and run the risk of losing them when wanted, or add to the cost by keeping them employed upon work that cheaper men could do better for the reason that they had been trained upon that line and could make better time.

The number of jobs finished will be governed by the length of time the holdup lasts and the number of times this state of affairs occur in a year.

If the output is ten, fifteen or fifty jobs a day, a day's or week's inactivity in the paint shop will not act as a shock absorber when the cost per job is figured out.

About the time you think you have picked up your pace and are going in full swing the crating department strikes a snag and another holdup occurs. Then after a few more days of halting and fumbling the sun begins to shine again and the craters get a supply of tops, aprons and cushions, together with their second wind and now things begin to hum until it is discovered that the supply of buttons have been exhausted, then another slack spell. After hobbling and halting along in this manner every month in the year one will begin to understand that to strike an average or indicate with any degree of accuracy the cost of one job lot in a lot of three to five thousand at the end of the season's output in a manner that would give the painters a fair deal would be next to impossible.

Intelligent co-operation is essential if good results are desired. Organization along lines that reduces friction to a mainimum and increases the output while keeping up the quality to a given standard is what counts. Each department, instead of acting as a brake or clog on the others should be operated in a manner that every effort and stroke will be made not only with a view to dispose of the work in hand quickly and accurately, but also with an absolute certainty that the part will not have to be changed or rearranged to meet conditions that prevail in other departments through which it will have to pass before it will take its allotted position in the finished vehicle.

The cost of painting may be lowered or raised in direct ratio to the number of well laid plans that precede the actual commencement of the work, or the absence of any or all intelligent preparation toward that end.

I speak of the painting department particularly because it has always had to answer for the sins and shortcomings of all the others both in the quality of the work and the quantity finished.

In a factory where the organization is loose, even if the men are competent and industrious, the amount of money lost is quite large. If any one department is lacking in system or enthusiasm in getting out work properly, both in quantity and quality, every other department will suffer.

In more than one instance that has come under the writer's notice, carriage builders that should have made fortunes in the business let their profits evaporate without leaving a clue by which the victims could trace the cause.

Yet the reason was plain enough and could have been avoided by exercising ordinary care. In each instance there was a lack of intimate knowledge displayed concerning inter-department relation, the effect of over-lapping influences had not been considered, with the result that each department was operated in a manner that caused all sorts of trouble before the vehicles were finished. Certain lines of standard work were always behind. Year in and year out orders were held up for weeks awaiting bodies and seats that should have been made long before and primed and rough-stuffed. The importance of having a full even surface on the panels seemed to have never occurred to the body and seat builder and repeated requests from the painting department to finish up the work in a proper manner was ignored. The fact that a poorly finished surface on the bodies, seats and gear parts made it impossible for the painters to do a creditable job of finishing did not disturb to any appreciable extent the feelings of those who were responsible for the work, and the management assuming that the foreman of each department was competent and capable, refused to interfere.

Thus the policy of the construction end of the business demoralized each department to such an extent that costly mistakes were made every day and the work suffered in consequence both in quality and quantity.

In good times these firms made money, but barely enough to bridge them over the depressions that occur at intervals in every business.

There is but one course pursued in all factories which succeed, and that is to provide a system by which the exact or approximate cost is known. In very many concerns the precise cost of the manufactured carriage or buggy in any quantity is known. To be able to arrive at the exact cost it is very necessary that the various departments co-operate and to co-operate intelligently there must be some one individual who can be held responsible. This man must be equipped with a fund of practical information which has been acquired at first hand in factories that build good work. He will direct the energies of the department workers in a manner that will secure best results at a minimum price.

Next to the factory which has no one to keep the departments in line is the one (and, by the way, this class is pretty numerous) which employs a manager who knows so little about the various methods and processes which he is supposed to understand that he is forced to rely upon the tips and hints supplied by the workmen whose knowledge is limited to what they know about their own calling. With this assortment of technical scraps collected in the different departments he sifts out a portion that seems to fit the trouble he has blundered into and assembles the mixture into a solution which he backs up with a positive that nine times out of ten proves to be wrong. A good deal, therefore, depends upon several things which the

foreman of any department in a carriage factory has no control. He may be a first class workman and a splendid executive, with a knowledge of all the details that should enable him to turn out fine work at a minimum cost, but if he does not receive the proper kind of support from the front office he cannot hope to make the stockholders love him.

## AUTOMOBILES AT ELECTRICAL SHOW

New York Electrical Exposition and Automobile Show in Grand Central Palace, New York, was a good show. Eleven brands of trucks and pleasure cars were exhibited by General Vehicle Co., General Motors Truck Co., Buffalo Electric Vehicle Co., Anderson Electric Car Co., Lansden Co., Studebaker Automobile Co., Atlantic Vehicle Co., Baker Motor Vehicle Co., Cleveland-Galion Co., Champion Electric Vehicle Co., and Ward Motor Vehicle Co. The battery manufacturers represented were: Edison Battery Co., Electric Storage Battery Co., Philadelphia Storage Battery Co., and Gould Storage Battery Co.

The Baker exhibit included a new type of coupe in which the seats are so arranged that the occupants of the forward seats may face in any direction without obstructing the view of the operator. The design provides for the option of two methods of control, one being by means of the regulation steering lever operated from the rear seat and the other by means of a steering wheel on which is mounted the controller handle, operated from the forward seat, in which case all the passengers face forward.

In the Baker two-ton commercial chassis several important alterations are apparent. The battery tray now is heavily braced to the side frame members in order to minimize the chance of injury to the batteries in backing up to loading platforms; the single set of service brakes has now been supplemented by an emergency set applied by means of a side lever and operating on drums on the countershaft; the frame has been strengthened by reinforcements; a dust-tight casing has been placed over the controller mechanism; the trigger preventing the controller from being inadvertently thrown to the reverse position has been taken off the controller handle and placed on the segment, thus necessitating two separate movements to obtain reverse. The commercials have been increased by the addition of a new model which is rated at  $3\frac{1}{2}$  tons capacity.

The Anderson Electric Car Co. exhibited pleasure and commercial vehicles. One was a new creation which displayed a number of unusual features. It was styled a clear vision brougham, the designation serving as an indication that, regardless of the position of the occupants of its seats, the driver's view is unobstructed. The control mechanism is placed in front of the left forward seat. The other front seat is of the swivel type and is arranged to fold up out of the way when not in use. The clear vision idea is carried even to the construction of the back of the car, in which the older pattern corner panels are replaced by curved glass panels which permit an unobstructed view to the rear and sides.

Another feature of construction is the use of aluminum for the roof instead of wood, the result being the weight is reduced. By way of rendering control easy to the tall and short, a new type of pedal has been adopted.

Appearing for the first time under its new name, the Buffalo electric exhibits earmarks of the former Babcock, though in the refinement which has been made a new type of slanting hood, which is the most apparent visible change from previous construction, has been adopted, to say nothing of several constructional alterations, which include a new type of rear axle calculated to raise still higher the high standard of efficiency of the cars.

Among the four cars in the exhibit was a coupe mounted on McCue wire wheels—it is said to be the first electric pleasure car ever to be so equipped. The standard battery equipment consists of 42 cells of 15 plate Philadelphia.

The newcomer is the Champion, manufactured by the Champion Wagon Works, of Oswego, N. Y. The other—the Atlantic—has, within the few months it has been on the market, created considerable of a reputation for itself, though it has not previously been publicly exhibited. It is manufactured by the Atlantic Vehicle Co., of Newark, N. J.

In evolving the Champion truck, the manufacturers have adhered closely to the use of standard materials, the idea behind the production being to market a vehicle for which repair or replacement parts can be obtained easily and with least loss of time.

In an electric the battery is the part which generally requires the greatest attention, so it has been placed up under the driver's seat, which may be tilted bodily, thus exposing the whole battery tray.

In the smaller vehicle the motor is flexibly hung from a cross frame member and drives through a short shaft and two universal joints directly to the rear axle. The shaft is encased in a tight housing and the reduction gear is a combination bevel and spur. The whole arrangement is simple.

The Atlantic, which is the other new truck, is distinguished principally for its business-like appearance. There is nothing radical or out of the ordinary in its make-up.

The Lansden exhibit was conspicuous by reason of a brand new type of tank wagon which incorporates new and interesting features. In the new construction the motor, countershaft and differential mechanism form a rigid unit, which by reason of the method of attachment to the chassis frame provides three-point support. The motor drives forward to the countershaft by means of a very short shaft, final drive being by means of the orthodox side chains. The controlling mechanism also has been altered slightly in order to provide means for interconnecting the emergency brake pedal and the controller.

A single five-ton chassis occupied the space allotted to the General Motors Truck Co., and except for a few minor alterations, which are strictly in the nature of refinements, it is the same chassis that made its initial appearance at the automobile show in Madison Square Garden last January.

The General Vehicle Co.'s exhibit has a  $3\frac{1}{2}$ -ton stake body truck. The remainder of the exhibit was made up of a 1,000-pound delivery wagon.

Among the few other manufacturers who staged big electric trucks was the Studebaker Automobile Co. Three vehicles were exhibited—a five-ton brewery truck, a two-ton truck and a 1,000-pound delivery wagon. In the five-ton vehicle a number of changes are apparent. The frame now is of channel instead of angle section; the battery equipment has been changed to consist of thin plate cells and the mileage of the truck considerably increased; both the countershaft and the motors now are mounted in heavy-duty ball bearings; corresponding to the change in battery equipment, the motors now are slightly larger and are rated to consume 45 amperes. As heretofore, the two motors drive through self-contained spur gear reduction to the countershaft and thence to the rear wheels by means of side roller chains. One of the distinctive features of the line is that the battery is mounted on auxiliary leaf springs within the battery tray, thus effectually cushioning it from shock and preventing deterioration consequent to the plates.

## BIG BODY PLANT PROJECTED

H. D. W. Mackaye, assistant to the president and director of affairs of the Keeton Motor Car Company, of Detroit, and also of the Keeton Motors, Limited, of Brantford, Canada, announced recently that the eastern interests with which he is connected contemplate the establishment of one of the largest, if not the largest, body building plants in the world for the manufacture of automobile bodies of both wood and pressed steel.



# SEASON PLAN OF MAKING AND SELLING AUTOMOBILES

By S. D. Waldon

The original "automobile season" opened with good driving weather in the spring and continued through summer and fall. Every maker produced his output so as to make deliveries during this period. The mechanical developments of the season were incorporated during the winter in the model to come out with the opening the following spring. This plan produced a tremendous demand at the opening of the season because it combined the natural demand of spring with the stimulated demand on account of the new vehicle with its improvements.

In those days we had the Auto Show in the fall in an endeavor to prolong the season and to get business to tide the factory through winter, but it did not work out that way. The only way to shorten the winter seemed to be to advance the opening of the season into it. This was done at about the rate of a month a year but with each advance toward midwinter the close of the preceding season seemed to keep its same distance ahead. In winter there were always two influences combined to retard sales. The unfavorable weather and road conditions for the use of a new car on the one hand, and on the other the fact that the new car of the fall or winter would be made obsolete by the new model in the spring.

Moving the opening ahead to close up the dry spell might be likened to the cat that gets started chasing its tail, unconscious of the fact that its own approach withdraws the tail.

It was not until we had passed midwinter and were opening the season in the fall months that the interval between seasons was materially reduced. The public purchased in the month from October to March because the vehicles were the newest models and with every latest improvement, and continued to buy through spring and summer because of good driving conditions. The year in this part of the country may for purposes of this discussion be divided into two equal sections. Six months, April to September, when conditions are favorable for the use of a new car, and six months, October to March, in which the average purchaser is loath to break in the varnish of a new car in the mud and slush, and in a great many cases cannot be persuaded to take a demonstration. The six months from April to September are good driving months, and provide their own demand. The six months from October to March are unfavorable to automobiling, and need a stimulant if one is to be had.

The greatest gap between seasons occurred when the six months of winter weather preceded the offering of the new models in the spring, and the minimum gap when the six months of good driving weather preceded the new season, which opened in October.

When the new model appeared in the spring all the advantage of good driving weather was added to the stimulant of the new models and the demand was greater than could be cared for, then, but with a tapering off as winter approached, and with every argument against purchasing during the cold weather.

When the new model appeared in the fall it furnished its own incentive to purchase during the first six months of bad weather, and of course the good roads and weather of spring and summer carried the volume along almost to the opening of the new season. Opening the season at the commencement of winter gave the factory and dealers courage and enthusiasm to drive ahead with manufacturing and selling campaigns during the bad winter months.

How to run our factories on an even keel all the year round is the vital question before all of us and it seems to be best answered under the plan we have used in the past by not

combining in the spring the two influences of new models and good weather and road conditions, thereby for a few months producing a pressure upon the factory that it is incapable of handling at that time, and with a subsequent reaction, but by keeping these influences separate and using the stimulant of the new goods at the beginning of winter to produce sales for dealer and factory alike through the six months of bad weather and with the natural driving season following to maintain a fairly uniform demand throughout the year.

The plan of selling by season grew out of necessity. Manufacturing economy demanded the largest possible factory orders that could be run through without change or interruption. Sales department efficiency demanded an up-to-date car, and mechanical development were being made by all companies at such a rate that no one could afford to run longer than a year without calling a halt and introducing the improvements. A year was the smallest unit of time to satisfy the manufacturing department, and the longest unit the sales department dare give.

So long as radical and real improvements are made in motor cars so long will some such plan as we have all been working under be necessary to meet the requirements of both the manufacturing and selling end of the business.

There is no denying the fact that it is a big undertaking to change over a large factory from building one car or line of cars to another, and no company would go to the expense and trouble if it were not justified by the returns on the additional business obtained as the result.

When finality of design is reached and there is no opportunity left for genuine and marked improvement then we may all abandon the idea of yearly models and build the same article continuously. I say we may do it, because even after we reach a point where we build the same thing year after year it may be desirable to manufacture in blocks of one year's output.

The chief objections of those who oppose the season plan are wrapped up in the difficulty of accurately estimating the public's requirements as well as the developments of competition. The temptation to make the manufacturing run a little larger so as to secure greater production economy is always great while sometimes the best laid plans are spoiled through competition educating the public to some other type of construction than you have to offer. The hardships of the season plan fall upon the company who for any reason has cars to sell that have been made obsolete by the new models of competition.

It would practically make no difference whether the industry were operated on the season plan by series, which amounts to about the same thing, or the continuous model plan.

A genuine improvement is a valuable selling asset and if made the most of through advertising by some prominent company immediately sets a new standard by which all cars are measured. It is not selling cars by seasons that should be criticised. The root of the objection is in the improvements that are made in the new models which add to their value and detract from all others.

Suppose that during the past ten years we had been operating under the series plan. The result would probably have been just the same. Every manufacturer would try to make as many of one kind of vehicle as possible, probably a year's run. The same selling reasons would necessitate the introduction of improvements at not greater than yearly intervals. All would have been introducing their series at about the same time or trying to get out first with the general result of grad-

ually advancing the opening date, and a convention at this date would probably be looking to obtain some change in the general scheme.

Suppose on the other hand the industry had had no set time for announcement but was split up into twelve divisions each bringing out its new series in a different month of the year. All but one-twelfth of the companies would have had obsolete models and there would always be the incentive for the purchaser to wait another month and see the next crop of new things.

In the last analysis any complaint against the season plan should be directed against the quantity of improvements—the rapidity with which they have been developed and the speed with which manufacturers have been obliged to work to keep abreast of the times.

If it were not for the improvements what good or harm could the season plan do. Without the improvements it is not a new model, and there is no stimulant for the prospect to buy.

The last seven or eight years we have been regularly confiding to ourselves that we could see the final car. We have always had this or that thing to add, and then the final car would be finished and might be manufactured without change for five years or more. But the new requirements that have been developed by the user have prevented us from ever catching up, and it is probable that the next five years will hold just as many improvements and the necessity for breaks in our manufacturing and selling for their introduction as we have had in the past.

A motor car is the most self-advertising article there is. It is as much a part of the owner as are his clothes. It lends itself perfectly as a medium for the expression of his sense of beauty in color and form. More different trades contribute to its making than to any other popular article in the world, and every trade is an opportunity for improvement. With the automobile industry now standing fifth in size in the United States, with the great incentive to individual initiative on the part of every member of it, and what is even more important with the keen personal interest in the cars of some one of us, of every successful business man in the country, it will be surprising, to say the least, if the next five years fail to produce some startling improvements over our present vehicles.

We are all here to build up a good name and to make money, and both can best be done by giving the public what it wants.

Above all things the public wants evidence of progress whether it be the same thing for less money or a better thing for the same price. The average buyer retains his car three to five years and then will buy again more or less readily depending upon the advantages offered by so doing. The public has been educated too well by the last ten years of the season plan and the addition of improvements by years to take kindly or quickly to any other basis. It is more of a task to go against the brute strength of such a combination demanding improvements by years than any individual maker cares to undertake, and it seems inevitable that the situation must be allowed to eventually solve itself through reaching an approximate finality of design.

It is perfectly certain that no matter what we may do on this subject in the matter of resolutions and recommendations, each one of us will go home and do what he thinks is the best for his business.

A prominent automobile company has run the same model for four years, practically without change. They have no patent on the plan and everyone else has a perfect right to do likewise, but if all the rest of the industry did the same, except one man who produced something new every year, that one man would have a tremendous advantage, which would not disappear until he had exhausted all opportunity for genuine improvement.

The season plan will have good cause for being so long as we can continue to make marked improvements in our vehicles, necessitating intervals of time for changing over our shops, and permitting our dealers to clean up one output before be-

ginning on the next. The season plan will cease to be just as soon as there no marked improvement to make the new vehicles more desirable at the expense of the old, and of others.

## FULL EQUIPMENT

Mr. C. S. Jameson, of the Willys-Overland Company, recently read the following paper before the Automobile Board of Trade:

I am of the opinion the subject of automobile equipment would have admitted of far more argument several years ago than it can possibly do today.

Custom and demand have, to my mind, settled any question and beyond any doubt. Full equipment must be furnished by the manufacturer.

When the automobile was in its infancy, naturally cars were not equal to those of today in any respect, and the prospective customer had not become "motor-wise" as he has at this time. Now full equipment is expected and demanded, and why not? Certainly the prospective purchaser has learned, either by experience or through a friend, that equipment is a necessity, and that he pays whether it be on the car regularly or at an additional cost. He further appreciates that if equipment is supplied at the factory, and by the manufacturer, it will mean better material, better workmanship, more effective devices, and a more harmonious whole.

He knows that the maker of a car cannot afford to jeopardize his reputation by supplying ineffective devices or material of questionable quality, hence the fully equipped product has the advantage to start with.

The purchaser of a car at \$1,000 should not look for the more expensive equipment, and that which would be out of proportion in comparison with cost or selling price. Still the evidence is strong that, regardless of what the prospective purchaser may be able to pay, he looks not only for such equipment—which might be termed a necessity—but also for that which represents labor-saving devices and comfort.

Manufacturers of medium—and in many cases lower-priced—automobiles have shown a willingness to furnish full equipment, and the builders of the higher-priced cars have, from necessity, been obliged to follow suit.

The greater margin of profit on the latter has permitted of more complete equipment and occasionally extravagance is shown. The future will see even more attention given to the subject of equipment which will represent logical and common sense reason for the difference in price.

A certain percentage of buyers at least will pay high prices for equipment "de luxe," as they will pay high prices for luxurious hotel, steam boat, train and other accommodations; however, the far greater majority of buyers are looking for their money's worth, and a wide awake builder of automobiles will, by ingenuity or through the result of volume production, obtain the desired result and at the same time keep within his class as to cost and selling price.

It must be conceded that the cost of equipment will be reduced as the demand increases, product becomes larger, and use more general. As the selling price of the automobile advances the demand is more limited and the purchaser more exacting.

The medium priced product has reached the stage where full equipment today is required, and the car selling at present for \$2,500, or above, must be equipped—so to speak—from "soup to nuts." The manufacturer who fails to realize this should not wonder why his dealers lack enthusiasm, and sales drop off.

The purchaser of an automobile is a Progressive, and demands up-to-the-minute ideas that add to his protection and comfort. He must be shielded from the inclemency of the weather. He must be permitted to ride on and on without worry and inconvenience.

The automobile without a top may be compared to a house without a roof. The individual who travels in his residence from one floor to another by simply stepping into an elevator

and pressing a button will not accept an old style of equipment, nor the lack of it which requires the cranking of an automobile engine on a hot summer morning or a cold one in winter.

The man who has electric lights in his home from cellar to attic will not be subjected to the use of kerosene lamps with their dirt, oil and smut, and this same party will insist on knowing how far and how fast he is traveling, whether it be by automobile or train.

The demountable rim helps to remove one of the great drawbacks to motoring. It is becoming more and more in demand each minute, but it remains for some fertile brain to give us an acceptable substitute for the pneumatic tire, something with which the words "puncture" and "blow-out" have no connection. He who can do this will surpass Edison in fame and Rockefeller in wealth.

Tire irons for one or more tires, and a receptacle for tubes should be supplied.

The manufacturer with antiquated equipment and construction will drop by the wayside.

One of the strongest arguments in favor of full equipment by the manufacturer is presented in the cheaply constructed top, top boot, and similar accessories made to sell to the dealer or purchaser of the unequipped car at a price. The question of quality never enters into equipment of this nature, neither does the matter of finish, design, nor conformation to the lines of the car receive any consideration. A car of quality may become a subject of criticism and a discredit to its maker through the ill-fitting, poorly proportioned and cheaply made top and top boot.

In some instances dealers have purchased tops other than that of the car manufacturers' make and of inferior design and material, and these have been sold to the customer as the factory article, unquestionably injuring the manufacturer's reputation.

The lack of full equipment has been said to encourage price cutting. The customer realizes the necessity of equipment, and the lack of it appeals to him as an arbitrary and unreasonable position on the part of the manufacturer. A haggling over cost follows and oftentimes results in the dealer throwing in the equipment at a loss to himself, and such action represents a cut in price.

We have noted the growing prominence of woman in the purchase of automobiles, as well as politics. As she gains the vote she will pick her car. She cannot crank a six-cylinder engine, but with an efficient self-starter, for instance, it is simple—it is easy—and she is not dependent upon the chauffeur.

The fully equipped car unquestionably gives the salesman advantage over competition in many respects, and without considering extremes or fads, the more equipment the greater the advantage. An article beyond criticism and satisfying every requirement fathers enthusiasm—the greatest stimulant to successful salesmanship.

Place the salesman in a position where he can utilize his time, his knowledge and his enthusiasm in extolling the merits and construction of the car he sells and not in making excuses because the manufacturer fails to include a boot with a top, or his fossilized ideas led him to think a self-starter was unnecessary and only a fad, or that the demountable rim rusted or was no better than the old clincher.

It is said that a man is judged by the company he keeps, the company by the men it employs, and I say an automobile is judged by its equipment.

## VOTING TRUST FOR U. S. MOTOR

Announcement of the formal plan of the reorganization of the United States Motor Co. is made public, but save for the fact that it provides for the issue of voting trust certificates, representing both first and second preferred stock and the common stock, all of which are to be deposited for a period of five years with a voting trust consisting of three men, the

plan does not differ substantially from that which was foreshadowed by the report of the creditors' committee.

The reorganized company will be capitalized at \$31,000,000, instead of \$42,500,000, as in the case of the company which went into the hands of receivers, the capitalization being divided as follows: \$11,000,000 seven per cent. first preferred cumulative stock, \$9,000,000 second preferred and \$11,000,000 common stock. It is understood that the reorganization will carry with it considerable change in the official make-up of the company.

An assessment of \$24 per share will be levied on all the outstanding stock of both the United States Motor and Columbia Motor Car Co., which is one of its subsidiaries but whose stock is separately held, which assessment will provide \$5,720,996 in cash, which, with \$1,009,091, the amount in the treasury of the big corporation when it failed, will afford quick capital of \$6,730,087, out of which the merchandise and banking creditors will be paid 25 per cent. in cash. The remainder, which is about \$3,000,000, will be available for working capital.

In addition to their 25 per cent. these creditors will receive 25 per cent. first preferred, 25 per cent. in second preferred and 15 per cent. common, a total of 90 per cent. The holders of preferred stock will receive 24 per cent. in first preferred shares, 25 per cent. second preferred and 30 per cent. common, a total of 77 per cent. Holders of common stock will receive 24 per cent. in first preferred, 17½ per cent. second preferred and 30 per cent. common, a total of 71½ per cent. The holders of the \$6,161,000 debentures will receive 50 per cent. in first preferred, 50 per cent. in second preferred and 40 per cent. in common, a total of 140 per cent.

All first and second preferred stock of the new company and all common stock other than shares reserved to qualify directors shall be vested for a term of five years in Charles H. Sabin, Harry Bronner and James C. Brady, and their successors as voting trustees, and voting trust certificates in such form as may be determined by the committee will be distributed in lieu of stock.

## WHAT A MOTOR CAR STANDS FOR

It is so well, concisely and impressively stated in a lately issued booklet by Mr. Chalmers that it is worth reproducing as an article, and we take the liberty of doing it.

A motor car is the most wonderful machine man has built for his personal use. As finely constructed and as perfectly balanced as a fine watch, it is still sturdy enough to carry heavy loads and to endure tens of thousands of miles of travel over all kinds and conditions of roads.

The automobile is man's most faithful mechanical servant. Properly cared for, it will give an as yet undetermined amount of work. It is ready to go when the master commands; it stops when he orders.

Unlike a locomotive, an automobile has no special requirements. It does not need a scientifically designed and expensively built right of way. Its fuel is easily carried and easily procurable. It does not require the constant attention of an expert mechanic or a professional engineer.

A motor car is as comfortable to ride in as the most luxurious brougham; yet it has the sturdiness of an ox-cart.

A motor car combines the best qualities of a horse-drawn vehicle and of a railway train, with the superiority over either that it will travel at slow or fast speed, over any kind of road, and carry its passengers comfortably.

Beyond all this, the motor car is one of the most wonderful things in the world because it utilizes more of the raw products and fundamental elements of nature than nearly any other machine that man has created.

Into the motor car go iron for the motor.

Steel for the gears, axles and other parts.

Brass for the motor parts and for the trimming.

Aluminum for the crank case and the transmission case.

Bronze for the motor parts and the carburetor.

Copper for the wiring.  
 Platinum for the magneto.  
 Nickel for the plating of various parts.  
 Wood for the wheels.  
 Leather for the upholstery.  
 Rubber for the tires.  
 Cotton for the tires and the upholstery.  
 Glass for the windshield.  
 Mica for the ignition parts.  
 Zinc for the battery.  
 Paper for the gaskets.  
 Hair for the upholstery.  
 Asbestos to protect the car from the heat of the motor.  
 Porcelain for the spark plugs.  
 Paint, with its basic pigments, its oils, turpentine, gums and other constituent parts.  
 Petroleum, which furnishes the driving force of a motor car.  
 Mineral oils and greases for lubricating purposes.  
 Electricity for lighting and for exploding the petroleum gas which operates the motor.  
 Water for cooling the motor.  
 Air for mixing with the fluid gasoline in carburation and for cooling purposes.

To the motor car nature has contributed the best of her products; and out of these many basic parts man has built his most wonderful machine.

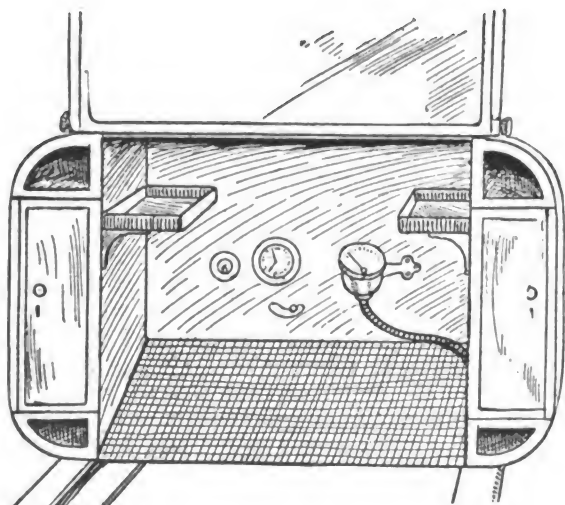
To utilize these many parts and to produce from them a co-ordinating mechanism which will do the things that are required of a motor car, has called into play the best inventive genius of the world; has developed new professions and new trades; has caused the invention of new and wonderful machines; has built up great manufacturing plants which are wonders of productive industry.

These are things which we all know in a general way, yet it takes a personal experience to force the real magnitude of the automobile industry home to an observer's mind.

In Detroit are built more motor cars than are produced by all of the other cities of the country combined. It is said that approximately one-fourth of the entire population of Detroit—the eighth city of the land—is concerned with the manufacture of motor cars and automobile accessories. Wherever one goes in Detroit, one sees motor cars and hears the names of motor cars.

### A ROOMY SUGGESTION

Here is shown a detail of dashboard arrangement allowing for receptacles on both sides. Tools, other small articles, including a drinking glass and a small bottle, and many items



are provided for. This matter of places to put things away appears to escape the attention of the builder unless its importance is brought to mind by the car user.

### VARIABLE TRANSMISSION RATIOS

Henry Sturme, in *The Motor*, has a talk on this subject which leads up to the use of the hydraulic idea to replace gears and their noisy, unsatisfactory operation.

The problem of transmission compared with the problem of power production, has received but scant attention. From the first the sliding or Panhard system of gearing has been recognized as unsatisfactory, yet, strange to say, nearly all the efforts which have been made in the direction of the gearing since the commencement of motoring have been aimed at the improvement of this system, rather than at providing a more satisfactory and a theoretically perfect one to replace it, and, curiously enough, what efforts have been made in this direction have, instead of meeting with approval, rather attracted the disparaging sneers of those who should have welcomed them.

Theory and practice do not disagree when theory is sound and practice efficient, and, so far as theory goes, our present methods are certainly open to improvement. Apart from the barbarity of the sliding-gear system, no system of stepped gradation of ratios between power and load can ever be accepted as anything but a makeshift. To be perfect, both in theory and in practice, the gradation must be infinite, and, while the power remains constant, there must be no periods of use, however short, during which it is not transmitted to the load with the highest efficiency. This means that, according as the load—or in the case of the motor car weight combined with gradient—varies, so does the ratio of power transmission require to be varied, and as, in road work, the load on the engine is constantly varying in infinite degree, so it follows that transmission ratios should also vary as the variations of the load, which they certainly do not as things are today.

The alternative is, with a constant transmission ratio, to vary the power with the variations in the load, a system which, within limits, is embodied where steam engines are employed, yet even the steam engine falls short when the maximum power has been reached, when, with a still increasing load, it must fail if some variation of transmission be not available.

So far as we of the motor world, using the virtually universal internal combustion engine, are concerned, we have been directing our efforts rather at obtaining power variation than towards perfecting our transmission, and in so doing have been employing a most refractory and unsuitable agent. We have, in short, been endeavoring to make the shortcomings of both power and transmission react upon and correct each other, a makeshift method in which we have succeeded—after a fashion. But we can never reach perfection by following such a course. Why not then strive after perfection in a possible direction, rather than continue to seek the unattainable along the lines we are pursuing, which can never bring us to our goal.

The highest attainable perfection, from a theoretical point of view, would be the combination of the infinite power variation (within limits) of steam, with an infinitely variable transmission, but it must be admitted that such perfection of variation would pass the point of commercial requirement, except in exceedingly rare instances, and as, so far as motor car work is concerned, the I. C. engine appears to have come to stay, the flexibility already attainable with this form of power producer, if combined with a reasonably efficient form of infinitely variable transmission, would appear to be able to give us about as high a degree of perfection as the needs of the average man requires. It is quite certain that such a combination would give us a control over our cars which we do not possess at present, and would bring us much nearer both theoretical and practical perfection than we are ever likely to reach along the present lines.

Let us consider for a moment the workings of the present system and we shall not be long in recognizing its imperfections. We have, let us say, an engine which will run, under load, from 500 r.p.m. to 2,000 r.p.m.—or more if we race the engine—and which gives its highest efficiency per revolution

at 1,500 r.p.m., and we have a transmission which, at 1,500 r.p.m. of the engine will give 30 m.p.h. of the car with two, three, or four variations of ratio, which will give us, at the same engine speed, two, three, or four lower speed ratios of the car. For the sake of illustration, take a three-speed gear, giving at "normal" revolutions—i. e., the point of highest efficiency—10, 20 and 30 m.p.h. If we want to go faster we speed up the engine, and may, by doubling its revolutions, get 60 m.p.h. on the level or on a down grade with the engine running at 3,000 r.p.m. But 2,000 r.p.m., with 40 m.p.h., is as much as we care to go to, as above that speed the noise and vibration of the engine become too much for comfortable traveling and enjoyment, and we do not gear higher because if we did we should be putting up all our speeds, and we may strike a grade the car would not take at all on the first.

Now, how do we drive? We aim to do "everything on the top," or as much as possible, and so we almost entirely "drive on the engine." The poor engine is trusted to for every variation of speed required. We want to go fast; we open the throttle, with the engine beating itself to pieces, drowning our ears with sound and sending its vibrations through every part of the car and using much more oil and gasoline than need be, for we are not getting power in proportion to our increased revolutions, and are using a correspondingly greater amount of gasoline per mile. If we want to go slowly, or slower than normal, we throttle down and run at perhaps 10 miles per hour. All this on level ground. On a hill we race the engine.

With the infinitely variable transmission there will be no more noise and grind on one ratio than on another. Engine troubles would cease to worry. This is now made possible by the practicalization of the hydraulic system.

### BEATING THE TAXIMETER

In addition to the "extras," many motorcab owners are undoubtedly robbed of considerable sums annually by a certain class of taxi driver, says Commercial Motor. There are many methods of procedure, some of which apply only in London, while some are only practiced in the Provinces.

In London, the taximeter and the transmission gear is sealed up, and is inspected by the authorities, so that it is practically impossible to tamper with them, while to drive with the flag up is to court detection with its attendant consequences.

A favorite method for a London driver to adopt, when dealing with a "fare" who appears new to the game or who does not seem to have noticed the amount on the taximeter dial, is quickly to jerk the flag up at the end of the journey, and to ask for a few pence more than the amount registered.

Another dodge that is in favor with driver-owners is to fit an 810 x 90 mm. cover to an 815 x 105 mm. rim, on the wheel which has to drive the taximeter. This will often make the difference of 2d. on a journey of about 1¼ miles. Although this alteration only makes a difference of four revolutions in the mile, it will often mark up 2d. which really ought not to be registered. To drive with a soft tire reduces its effective diameter, thus helping to increase the illicit profit.

In London, if a driver gets a job for a few miles at night, he will often drive with the flag in the recording position until he reaches a quiet part of the route; he will then put the flag up, and will finish the journey in that way, asking his fare for an amount slightly in excess of the legal one. He will, in this case, pocket the difference between the amount registered and that obtained.

One very ingenious method is worked as follows: Underneath the meter, and surrounding the joint between the flexible cable and the meter spindle there is a brass tube about seven inches long; this is sweated into a brass-flanged collar. A set screw, with a hole through its head, is passed through the flange of the collar and screwed into the base of the meter. A wire is then threaded through the head of the set screw and twisted round the tube. A lead seal being affixed and closed by means of a punch, this part of the mechanism is

supposed to be protected effectively. But the mechanically-minded driver obtains a blow lamp and unsolders the tube from the collar, draws it down, cleans off the superfluous solder and makes the tube a nice push fit into the collar, leaving the seal and wire intact. The driver can now get at the coupling pin between the meter spindle and cable whenever he likes, so that he can do jobs with the flag down, while only time is recorded on the meter. He relies upon the easy-going nature of the public to accept the statement that the meter is out of order. He can take his cab in to the garage and leave it there with impunity, as this trick is not suspected. Sometimes the wire passing through the head of the set screw is moved slightly to one side, the portion normally in the head of the screw is cut through, its ends opened out, the screw withdrawn, and the coupling undone. When the screw is replaced, the ends of the wire are tucked neatly into the hole in the head of the screw, and everything appears to be all right on the return to the yard.

Cabs fitted with detachable wheels, having the star bands fastened to the spokes, offer a very simple proposition to the driver, as it only takes a few minutes to fix the spare wheel in the taximeter-driving position. The original may be replaced when the faked job is completed.

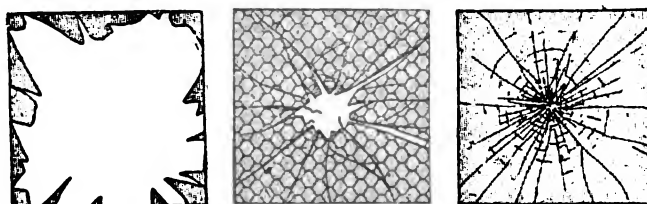
Sometimes it is possible to slack a spring clip sufficiently to move the star-wheel bracket, so that the wheel is out of mesh with the band. A tooth knocked out of a star wheel will answer very well for one occasion, as perhaps would the breaking of a sealing wire, the statement being offered on return to the depot that the tooth or wire respectively must have fallen off or broken while running.

Ordinary fixed wheels are sometimes changed over from side to side so that the star band is on the side where the star wheel is not. Drivers have been known to have a collar made which will fit on the hub and will thus pack the wheel out, causing the band to clear the star wheel. All these tricks have to be worked in collusion with the hirers.

Only a few of the possible methods of beating the mechanism have been dealt with. A driver admitted that he knew 26 different ways of robbing his employers.

### A NEW KIND OF GLASS

A number of attempts have been made to render glass unbreakable or incapable of causing serious injury in the case of a smash. The method of embedding wire is of considerable use and has effected the main requirement in keeping the large fractured pieces of glass together. This principle has certain disadvantages. It is not quite proof against a direct shock, as a heavy blow will practically punch a large piece out of the sheet, and the transparency of the glass is interfered with



by the meshes of the wire. Some attempts have been made to produce annealed glass.

The latest departure in rendering glass safe is known as the triplex safety glass. A sheet of specially selected clear celluloid is placed between two sheets of plate glass, and the three sheets, after a patent treatment, hydraulically pressed together. The result is a sheet of glass which is, for all practical purposes, as clear as the best sheet glass. The principle is applicable to thin sheet as well as heavy sheet. That the method of construction is efficient would appear to be fully proved by the following tests which were recently carried out (see illustration). A sheet of the triplex glass was placed in a frame and mounted vertically. A round iron weight of two pounds



was suspended on a cord 15 feet from the ceiling, and in such a way that, when released, it struck the triplex glass fair in the center. It merely bulged out approximately to the shape of the iron ball on the other side of the glass, this being solely due to the tenacity of the celluloid. Moreover, the glass, although actually fractured into a great many pieces, did not splinter or fall away. The same test applied to ordinary plate glass completely shattered it, and in a case of a test made with the wire-imbedded glass, the suspended weight drove a large hole clean through it, some of the pieces of the glass being scattered a considerable distance.

The celluloid being hermetically sealed between the glass sheets cannot tear and remains as permanent as the glass itself. Unprotected celluloid very soon discolours, becomes scratched, and rendered inefficient for the purpose of a screen. Moreover, there is the risk of fire, while the triplex sheets are perfectly fireproof. An interesting fact which shows the great tenacity of triplex glass is that it can be cut on both sides with a diamond without parting, and to cut it a special process has to be adopted.

### MOTOR CARS IN CHINA

It is characteristic of Shanghai that the types of motor cars to be seen on its streets are cosmopolitan to a remarkable degree. A great number of styles and designs are represented, and the city can boast of cars from all the important centers of manufacture—England, France, Germany, United States, Switzerland, Italy, and Belgium all being represented. In a list of the cars of 400 owners nearly 50 different designs are to be found.

Only a short time ago the Frenchman favored a French car, the Englishman an English car, etc., but now a very noticeable change is taking place. Prospective buyers now see that a particular type of car is necessary to meet local conditions, and the demand is now for certain characteristics which would not be so necessary anywhere else in the world.

Style, which was formerly subservient to nationality, is now the first thing considered. Runabouts of various origin are gradually becoming similar in shape. Doors are being fitted to bodies with the practical idea of affording protection from dust storms. Wire spokes have almost entirely been displaced by wooden ones.

Another innovation which makes for safer driving in Shanghai is the gradual introduction of the irreversible steering gear. In 1912 models the control levers are placed in the center of the car, allowing both front doors to be used conveniently.

If there is any sensitive part to a motor car in Shanghai it is the carburetor, and unless it is of the best design and absolutely automatic there is no limit to the trouble which may ensue.

The peculiarities of local traffic render the matter of wheel base one of great concern, affecting as it does the art of driving through narrow streets crowded with a class of people who generally seem to be suffering from ear trouble. Experience strongly suggests that the short wheel base is by far the most practical and satisfactory in Shanghai.

### TRY-OUTS OF COMMERCIAL MOTORS

General opinion among all directly concerned in the trials of French motor trucks conducted under military supervision, and which have recently been concluded, ascribes to these trials a much greater importance for the rational development of motor truck design and construction details than could be credited to any other tests. The basis for this opinion is to be found in the duration and thoroughness of the trials, the total absence of prizes and awards and the impartiality of the military authorities.

The first conclusions after the trials had been in progress for some time, under rather severe weather conditions, were to the effect that the forty chain-driven vehicles had demon-

strated no advantages by reason of their driving system over the twenty-two shaft-driven vehicles, that wood wheels are still preferable for trucks, that rubber tires are a necessity at all speeds exceeding 12 kilometers per hour, and that motor brakes are practically indispensable. A well known technical commentator notes the fact that many constructors, among whom Renault, Saurer, Berliet, De Dion-Bouton, place a positively acting centrifugal governor inside of the crank case where the driver cannot get at it, so that it becomes mechanically impossible for him to drive the empty truck faster than the loaded one or beyond its predetermined maximum speed. The wheel brakes need to be improved, he says. He refers to the brakes on Parisian omnibuses as a model for imitation with regard to construction—which includes an oil-tight casing around the brake drum—as well as in regard to the system for keeping them in order. But, he adds, it would also be very desirable to have the motor brake, as used on Saurer or Panhard trucks, generally adopted. It represents the only braking method admissible for vehicles of considerable tonnage in hilly countries with long gradients.

### CHANGES IN DESIGN IN ONLY TEN YEARS

The chameleon-like changes in what was thought near perfect (!) only ten years ago are recounted by M. Faroux, a distinguished French engineer. We mention here a few.

It was during the first two years of this century that the operation of automobiles became sufficiently safe and regular to assure them their place among the standard means of transportation. From the year 1902 people began to recognize the different manufactures by the shape of the motor hood, which is equivalent to saying that other differences in the chassis became too inconspicuous to attract the notice of the general public. The age of refinements had begun.

The motor ten years ago was heavy and had small power, low compression and small speed. It turned at from 750 to 900 revolutions per minute. Only a few single cylinder motors reached 1,200 or 1,400 revolutions. The two-cylinder casting was the rule, the monobloc unknown. Admission valves were actuated by suction and the cam shaft gears were often exposed. The motor was regulated by blocking the exhaust on the hit and miss plan. Throttling was unknown. The unclutched motor turned in a series of spurts and checks, with the governor spasmodically tending to maintain a constant speed by the inadequate means just mentioned. Variations of the vehicle speed were obtained by maneuvering with the gear speed levers. The small 4-cylinder motor did not exist, and the number of cylinders was in practice determined by the power it was desired to obtain. Up to eight horsepower the motor had one cylinder, from eight to twelve or fifteen it had two and only above that four. Six and eight-cylinder motors were in the state of samples or projects only.

Lubrication was effected by splash only. Variations related to the means for getting the oil into the crank case—by hand pump, by gravity or by exhaust gas pressure. While valves were automatic, carburetors were not so. It was not till 1903 that Col. Krebs introduced automatic regulation of the gas mixture acting on the air supply, and later came the modern apparatus acting on the fuel, by which perfection is almost realized.

Ignition at that time was the nightmare of the chauffeur. Electricity by degrees triumphed over hot tubes but had for its source only dry or storage batteries.

Vehicle frames existed in all possible variations excepting the one which is now standard; that of pressed steel. Panhard used armored wood. Charron forced wood into a steel tube which was afterwards rolled flat. Some used the rolled structural steels of commerce, but a large majority used the drawn tube borrowed from the bicycle industry, only larger. The pressed steel frame first appeared in 1903 and gradually displaced all other forms. For axles, tubes were used and also solid oval or rectangular sections of forged iron or soft steel.

The I-section came only with the Mercedes school of design which brought us annular ball bearings, push pedals, honeycomb radiators and multiple sliding gears with lateral displacement; also the modern form of the front wheel spindle and its mounting. Some firms continued to use adjustable ball bearings, of the bicycle pattern, in the wheels up to 1906.

The rivalry between wood and wire wheels was sharp at this period, and the victory of the wood wheel seemed definite in 1903. Yet, the wire wheel returns now to give it battle again, but in demountable form and with many improvements. Vehicle springs were nearly what they are now, only shorter, more arched and less flexible. Often the rear springs were placed directly under the chassis, but on the whole the progress in spring suspension has been slight except in the matter of shock absorbers and elastic shackles which were unknown in 1902.

### SAFETY RADIATOR CAP

The idea illustrated is one of those wrinkles the manufacturer can put on the car with hardly any expense and give something that is a neat feature as well as a talking point.

Very often, if a radiator cap is not carefully fixed, it works loose and is lost on the journey; again, drivers sometimes place a cap down when filling up the radiator in the dark, and are then unable to find it again.

A thin link chain about four inches long should be obtained, and this should be fitted at one end with a bar rather greater in length than the diameter of the inlet pipe to the radiator.



This bar should be attached to the chain at the center. It is an advantage to have it shaped as shown in the sketch, as the weights at the ends help to keep it in a horizontal position. The other end of the chain is soldered to the inside of the cap. Of course, you will see that the cap cannot be lost unless the bar assumes a vertical or nearly vertical position, so allowing the chain and bar to fall out of the filling hole. If the cap unscrews it is still held by the bar.

### SALE ADVERTISED A DAY TOO LATE

Chancellor Walker refused to confirm the sale of the Fitzgibbon & Crisp Wagon and Carriage Company, Trenton, N. J., to Barker Gummere, Jr., for \$33,000, holding that the last publication of the advertisement for the sale of the property appeared in a newspaper of the same day as the sale.

### WHEREIN TRUCK IS AKIN TO TROLLEY

It is an indication of the progress that has been made in the construction of commercial motor vehicles that owners now are inclined to place them in charge of former drivers of horses rather than qualified chauffeurs, says Motor World. Were the motor truck a machine of many moods and whims, so to speak, requiring the constant attention of a highly skilled mechanic, the horse driver would have no place behind the wheel; and, as a matter of fact, it is only of comparatively recent times that it has been practicable to dispense with the high-priced specialist.

In this respect the motor truck is getting into the same class with the trolley car, which is intended to be driven by the motorman, but given what extra care it needs by specialists in the shops. Only in this way can the motor vehicle be made to operate with maximum economy, for it is obviously extravagant to pay a skilled mechanic to do driver's work.

Apart from his inability to cope with mechanical troubles, the better sort of horse driver is a more suitable man for motor truck work than a regular chauffeur, not only because he is well satisfied with smaller pay, but because he is thoroughly familiar with trucking conditions and, moreover, knows many details of the handling of the material he hauls, all of which usually cannot be said of the "graduate" chauffeur. So it comes that the truck builder is solving more problems than the purely mechanical one of the truck itself, by making possible the economic division of labor.

### ELECTRIC BUGGY LIGHTS

It is quite a long step in advance to have an electric vehicle lamp so good, so well within reach, and so reliable that the humble wholesale buggy can afford it, and, in fact, will not in future be seen without it. This big advance is due to the efforts and ability of the Electric Lamp Equipment Co., of Connersville, Ind., a little brother of the big Indiana Lamp Co., at the same place. The lamps have been named Lunar, but the light of the moon is not in it with the namesake. But this is the point: Here is a lamp a buggy builder wants, or will be forced to use by the strength of the position, so why not at once get all the facts concerning the goods?

### OVERLAND COMPANY HAS MADE SPLENDID RECORD

An increased production from 401 to 40,000 cars in five years is the record attained by the Willys-Overland Company, makers of Overland motor cars. It is a record that probably can not be equaled by any other manufacturer allied with the industry.

When President John N. Willys secured control of the Overland concern it was not an important factor in the trade. During 1908 the company sold 401 cars, but under the guiding hand of the energetic Willys the following year 3,891 cars were sold. By this time the sales organization and manufacturing facilities had been perfected and Mr. Willys realized that quantity production would be the only way in which he could reach the top rung and produce good cars at minimum prices. During 1910 the sale of Overland cars jumped to 15,254. The following year 14,007 were sold and 1912 witnessed an increase in sales of 20,845.

The Overland Company plan to manufacture for 1913 40,000 cars, which will break all records of production for a car of this type.

### MARMON TO BE NEXT HEAD OF S. A. E.

Howard Marmon, of the Nordyke & Marmon Co., Indianapolis, will be the next president of the Society of Automobile Engineers. He has been selected for the office by the nominating committee, the nomination being equivalent to election.

## TIMBER USED IN COACHMAKING IN ENGLAND

In all countries the first timber used in coach making would be the timber grown in the country, and when foreign timber was offered in that country no coach maker would buy it unless it were decidedly better or cheaper than the home-grown timber, and when the best timber for a certain purpose was not available the coach maker made use of what he considered the second best, and sometimes found this to be actually better than what he had originally considered the best.

In England, ash, oak and elm are the three kinds of timber generally selected by coachmakers, but beech, hornbeam, poplar, fir, sycamore, alder, Spanish chestnut, walnut, lime, and some others are occasionally used.

The most important foreign timbers are mahogany, walnut, cedar, yellow pine, and other kinds of pine, deal and spruce, lance wood, satin wood, hickory, white wood, squoia, butter nut, bass wood, teak, American oak, ash, elm and birch. Wainscot oak and a variety of timbers like the English timber of the same name, such as Hungarian Ash, Prussian oak, Italian walnut and so on.

Ash is used for the framing of bodies and undercarriages, for poles, felloes of wheels and for bending.

For these purposes ash should be white and hard and straight grained and heavier than the average; the trees that produce this quality of timber have a thin smooth bark, and are comparatively young trees, seldom exceeding 18 inches in diameter. It is generally said there is no better wood for poles.

Other ash timber is of a rather dark color and often quite brown in the middle.

American ash is also met with in two qualities, white hard timber generally called second growth ash, and a lighter but browner wood that is generally cut into boards, used for foot boards, bottom boards and solid sides.

English elm is of two kinds, the narrow leafed or Dutch elm, which grows to a large size, and is usually cut into boards; the grain is very much interlocked, and there is very little sap wood. The wood is brown almost to the outside. The boards seldom dry perfectly flat, but however much care may be taken in stripping them when they are stocked to dry they scallow (form little hills and hollows) to that it often takes a board one inch thick when sawn out to make  $\frac{5}{8}$  inch when dry and planed up.

The other variety, the broad leafed or wych elm, is a taller tree, but does not attain the same girth as the Dutch elm, and the sap wood is very white, so that it is very distinct from the heart wood. Young trees of this variety make the best hubs. The grain is not so interlocked as in the other variety of elm, and it is not as strong, as heavy, or as tough as ash, but can sometimes be used in place of it.

English oak is chiefly known to the coachmaker as a timber suited for spokes. There are two varieties of oak, the common oak, which has the acorn growing on the twigs without any stalk, and the other whose acorn hangs down at the end of a stalk; and this latter is usually considered to be the best oak for spokes.

Larger trees are cut into planking, but it is not often used by coach makers, although it is the best English timber for use wherever there is much exposure to damp, such as the front boot, bottom sides of a close carriage, or the bottom sides of a cart. Oak does not dry as quickly as ash, and the tannic acid in the wood will, if in the least damp, cause iron that touches it to rust, so if iron screws are put into oak they must be well greased. Hornbeam is, except box, the hardest English timber, and is rather heavier than ash, but it is not so tough—an ash bar will bear about twice the weight that a beech bar would stand if the weight is applied across the grain—but if

the weight is applied endways of the grain, then beech is about as good as ash.

Beech is often cut into felloes, and they stand well if painted and kept dry, but the grub that makes what are called worm holes attacks this timber sooner than any other if it is not well painted.

Spanish chestnut closely resembles brown oak and makes good planking.

English walnut has often the same fault, but is in other respects equal to the plain American walnut.

Sycamore is a very beautiful white wood, not as strong as beech, and if exposed to the wet it goes rotten very quickly and turns a very ugly brown color. It may be sometimes used for varnished work, but it must be very well looked after. It is probably the most perishable of English woods, except horse chestnut.

Alder is a light but tough yellow wood, and may be used for the framing of light broughams, but not for the important parts. Poplar is a light tough white wood, and has been used for bottom boards, seat boards, and for the sides of farm-carts, and for battens of carriages. It makes very good floors for a carriage manufactory, as the tires of carriages do not cause it to splinter, and though not fire proof, it resists fire better than any other English wood.

Both lime and poplar are used for carriage panels on the Continent.

Larch and spruce are occasionally used. Larch is much the same as Canadian red pine, but is more resinous and does not take paint so well, and English spruce is just like foreign spruce or white deal.

The foreign timbers used for the frame work of carriages are very numerous, and every year adds to their numbers.

Lance wood from Cuba and Central America is the best wood for cart shafts; they are seldom made of any other material for first class work, though green heart and second growth hickory are used as a substitute for lance wood for common work.—Cooper's Vehicle Journal.

### VEHICLES WHICH SHOULD BE MADE OF OAK

There are quite a number of vehicles which, on account of their special work and conditions, necessitate the framing being entirely constructed of oak, says *Automobile and Carriage Journal* (England). The vans and carts used by ice merchants, brewers, fishmongers, and in fact any vehicle which is always carrying wet materials, or that carry materials or goods which necessitate thoroughly cleaning of the van often. For instance, an ice van is always sodden with water, a milk van is not necessarily wet by the carrying of milk churns, but the constant washing makes it very important that the timbers should be of oak. It is well known that oak will resist water for a much longer period than ash. It is because it contains tannic acid, and although it does not prevent the oak from absorbing water, it prevents decay from setting in. Oak has been in a good state of preservation after being buried for several hundred years. The practice of using oak for the bottom frames of vehicles should be maintained for the reason of its lasting qualities and its great strength, although perhaps not so elastic as ash, and a little heavier, but its superior qualities more than compensate for this small disadvantage. The amount of work entailed to replace these structural parts compels the builder to use the very best materials obtainable for this purpose. In building ice vans, in which case the woods are always wet, oak panels are used. These, by the way, are somewhat difficult to obtain, as the demand is not so great as for other woods, such as birch, pine, and American ash, at the thickness required for the purpose. The oak boards would be very difficult to

keep for any length of time, as they would be very susceptible to twist or split if not thoroughly kept from draughts and excessive light, and, on the other hand, if cut into boards as required, the shrinkage would take place after being fitted. Oak flooring boards are sometimes used, but when there is any question of weight to be studied a lighter kind of wood is substituted. A good thick coating of white lead should always be applied to the frame work before fixing the floor boards, and, in fact, at all joints, whether of iron or wood, as the wet will penetrate in time, and the paint lessens the possibility of decay. It is also advisable to use oak for the forecarriage and axle beds in these special classes of vehicles, for the same reason that the wet has less effect upon them.

### "SMART BUGGY BUILDING"

Under this head the Register of Adelaide, Australia, has an account of the opening to the public of the buggy factory of Duncan & Fraser. Mr. Fraser is well known to builders in this country. We make extracts:

"September 11, Duncan & Fraser threw open their factory to give their customers and the public an opportunity to witness the various processes through which the materials employed in carriage building have to go before the completed vehicle is ready for use. The firm have been engaged in carriage building for nearly 50 years, and their business has grown with the state, and so great has been the expansion during the last few years that in spite of continual additions to the large two-storied premises in Franklin street, and the addition of many new and up-to-date machines, they have been compelled to purchase another building at North Adelaide, covering more than an acre. Some idea of the size of the establishment may be gained from the fact that on this occasion no fewer than 150 workmen were engaged in the various departments. The amount paid in wages aggregates about \$100,000 per annum. It is remarkable that despite the rapid increase in the use of motor cars, the firm's output in horse-drawn vehicles is continually on the increase, and has never been larger than it is today. The gathering was large and representative, and must have numbered 4,000. The fair sex were present in large numbers. In order that the whole of the operations should be seen it is the firm's custom to have a buggy built completely from the raw material to the finished article ready for the road. In 1908 that was done in 2 hours 48 minutes. In 1910 2 hours 15 minutes were taken, and on the present occasion 1 hour 52 minutes was required for the completion of the task. The 1908 buggy was on view and attracted much attention. Duncan & Fraser have built up a splendid reputation for the excellence of their productions in all classes of vehicles. As builders of tram cars for both horse and electric traction they have made their name known far beyond the bounds of the state, and the present occasion offered a splendid opportunity to witness a fine display of craft workmanship, which was intensely interesting to all present, and of high educational value as an object lesson."

### MERITS OF AUSTRALIAN WOODS

These timbers, especially blackwood, maple and silky oak, as well as boolegum, hoop vine and mountain ash, are coming into favor, for decorative uses especially. Fiddleback blackwood is a beautiful timber; Queensland rosewood is also a fine timber, but can not be obtained. The Queensland railways have not penetrated far enough, and, although there are extensive rosewood forests in that state, they can not get the wood out.

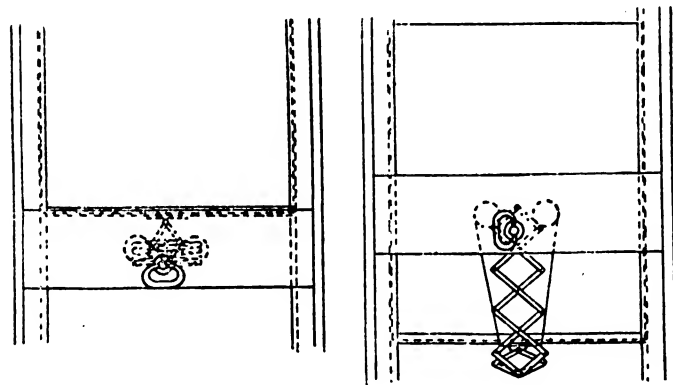
Automobile body building is a growing industry in Melbourne, but apparently Australian hardwoods have found little favor, yet for this work makers admit their excellence and strength, but state that in light machines like motor cars they have to study weight, and ash and similar timbers that have strength and not the weight of the Australian hardwood are generally

used. For heavier work, such as motor lorries, Australian hardwood can not be surpassed, and is generally used. For buggy and carriage work American hickory is preferred, but for lorry and heavy work it is recognized that nothing can be better than the Australian hardwoods.

For carriage construction the timbers principally used are Queensland maple, cedar, yellowwood, hoop pine, and kauri, with small quantities of bean, penda, silky oak, and milkwood. For internal decorations maple, cut in the quarter, and cedar are most effective, but Queensland silky oak and Huon pine are also used. Considerable quantities of blackwood, both Victorian and Tasmanian, are required for various classes of work.

### SOMETHING NEW IN A WINDOW RAISER

Mechanical aids for the purpose of assisting the lifting of carriage windows are not new ideas. The earliest record is of one which was patented in 1792 by William Barbor, where cords passing over pulleys and attached to weights sliding in grooves were fixed to the bottom corners of the glass frames and so balanced them. These beginnings have been followed by many improvements. An application of the lazy tongs principle has been utilized before, but the attachment was at the bottom of the door and the springs operated them. In the Ideal window appliance the attachment is at the top, fixed to what is called the garnish rail and operating by means of cords and clock springs to raise the window. Fig. 1 of the illustration shows the apparatus closed up and the window closed, and Fig. 2 the fitting partly open and the window also. The two discs shown are grooved and hollow pulleys, inside



which are coiled stout clock springs, one end attached to the pulley, the other to the fitting. The pressing down of the glass winds up the springs by means of the two cords. The springs, seeking to release themselves, pull upon the cords and so raise the window. The appliance is brought into action by the turning of the handle, one complete turn being all that is necessary to lift the glass from the bottom to the top of the run. The handle, which may be of any desired convenient shape, is fitted to the center of the door and operates very freely, holding the glass securely at any one of several heights; the glass cannot be pressed down, or shake loose, neither will it rise by the action of the springs unless the handle is operated. The glass run is single, of the thickness of the glass, plus the velvet lining, and straight, so that the minimum of room is taken up on the limousine or saloon body.

### LOW PRICED VEHICLES

During the Federation convention surprise was expressed over the fact that many dealers buy low priced buggies from a concern generally known to be selling 60 per cent. of its output to catalog houses, and somebody explained that the dealers buy sample jobs for stool pigeon purposes. We think an investigation would show that most of these dealers buy the low priced work regularly, not for stool pigeon purposes,

but to place themselves in position to compete with catalog houses in price. And many more dealers who will not buy from builders who supply catalog houses would like to establish connections with loyal manufacturers who can furnish low priced jobs. The dealers say there is a demand for such jobs in excess of the supply and they wonder why the product is not increased to meet it.—Farm Implement News.

### THE HANSOM CABS

In Fifth avenue and on Riverside Drive, too, was a queer reversion to type. It was the return of the hansom cab.

Nobody knows from where the old two-wheelers came. But it is true that there were more two-wheelers than taxis in the main up-and-down streets and the Riverside Drive from noon until the yellow-and-wet dust simoon began.—Evening World's eRport of a Sunday Parade.

The hansom cab has "come back" for every day use both as a private and public vehicle and is especially popular "by the hour" for shopping and calling within limited zones. It is comfortable, airy and a pleasureable lookout. Now, not only the hansom, but all horse-drawn vehicles, are returning to the streets in daily in creasing numbers. A few months ago gigs, broughams, phaetons, runabouts and similar traps were a drug in the market; at the Durland sales last spring they went off "like hot cakes" at surprisingly high figures, which were in excess of more than half their original value. For example, Mrs. Bowen's miniature coach was sold to Mr. H. C. Jackson for \$1,300. A lady's park phaeton brought \$560, a gig \$205, a runabout \$215 and a top buggy \$260. Carriage builders and dealers like Studebaker; Fiss, Doerr & Carroll, and Van Tassel & Kearney report equally good prices and a demand greater than the supply. Coach and carriage builders like Brewster and Healey, who have given up horse-drawn vehicles and gone over to automobiles, may realize in time that they also had better "come back" and "get into the old band wagon," unless automobile killings should so decimate the population that, nothing but a trolley line of hearses to the various cemeteries being profitable, they should feel obliged to jump again and go into the exclusive manufacture of "dead wagons."—Rider and Driver.

### A CHANCE TO LOOK BACK

The occupants of the rear seats of a motor carriage are generally supposed to have all the opportunities afforded by an irresponsible position for maintaining a free and independent outlook. Hitherto, when the hood has been raised, this outlook has been largely confined to the front of the car.

With two celluloid windows in the hood the occupants of the rear seat can thus look backward as well as forward, and are able to inform the driver of overtaking traffic. Incidentally, the driver, when alone, has a better command of his position on the road from the increased facilities for looking backward as well as forward.

### TO KEEP OIL STONES SHARP

A good method to keep the corners of India oil stones sharp and the surface of the stone flat is to have at hand a planed cast-iron plate on which to true the stone by sprinkling powdered carborundum over the surface of the plate and lapping or rubbing the stone to a flat surface.

This rapidly trues the stone and also sharpens it and improves its cutting quality by the fact that it becomes charged with carborundum which is forced into the pores of the stone.

A harder stone may be used when it is kept sharp with carborundum than is otherwise the case.

### SIMPLE TEST

A simple way to detect acid in lubricating oil is as follows: Place a little of the oil in a closed bottle and add an equal amount of water in which has been dissolved a small amount of sodium carbonate. If the mixture be shaken violently and then set aside and allowed to settle, the amount of sediment will be an indication of the amount of acid in the oil. This does not, of course, tell the exact quantity of acid present, but is a useful comparison of the relative amounts of acid in several samples of oil.

### OFFICERS OF ILLINOIS RETAIL DEALERS' ASSOCIATION

At the final session of the thirteenth annual convention of the Illinois Retail Implement and Vehicle Dealers' Association held in Peoria, the following officers were elected: President, John F. Lueth, Kankakee; vice-president, William Morris, Decatur; secretary, J. A. Montelius, Piper City. Phil Hoffman, of Pekin, and A. R. Keeler, of Altoona, were chosen directors of the association.

### CUTTING AUTO PLANT WILL BE ENLARGED

The Cutting Motor Car Company, of Jackson, Mich., has made arrangements to double the size of its plant and additional land next to the factory has been purchased for that purpose. The present plant, the rearrangement and enlargement of which are about completed, is now at the height of its activity in producing the 1913 line. The new factory will probably be in course of erection by next spring.

### RIGHT AND LEFT CONTROL

It seems to be generally admitted that the left-side steer has all the advantage for city driving, while for country driving, the right-side steer is superior. As regards motor trucks, it is almost universally conceded that the left-side drive is better, as the greater part of their work is performed on the city streets.

### HARDWOOD STAINS

White stains on finished hardwood caused by heat may be removed by covering them with salt and as much olive oil as the salt will absorb, allowing this mixture to stand for several hours and then removing it and rubbing the wood dry.

### LEATHER TRIMMING OF AUTOCARS

It takes anywhere from 150 to 200 square feet of leather to upholster an automobile, and on some of the large touring cars it is figured that the whole of four hides is used on one car.

### WHERE MEXICO GETS ITS VEHICLES

Carriages and automobiles come from this country, France and Germany. Carts, cars and wagons mainly for commercial and agricultural use from the United States and France.

### SUPPRESSED

Little Clarence (who has an inquiring mind)—Papa, the Forty Thieves—

Mr. Callipers—Now, my son, you are too young to talk politics.—F'uck.



# Trade News From Near and Far

## IMPROVEMENTS AND EXTENSIONS

J. P. Beck has moved into new and larger quarters at Saginaw, Mich.

The Aldrich Co., of Marion, S. D., has begun the erection of a new vehicle warehouse.

C. F. Heckenhauer will erect a two-story brick carriage shop to cost \$2,000, at Muncie, Ind.

Schoepp Bros., dealers, of South Shore, S. D., have begun the erection of a large warehouse.

A large addition to the Collings carriage factory, Front and Arch streets, Camden, N. J., is contemplated.

A permit has been granted Herman Stalb to build a wagon shop at 3717 Woods street, Wheeling, W. Va.

Anthony Grab will erect a concrete building for his wagon shop at 718 Broadway, Buffalo, N. Y., to cost \$15,000.

The Rauch & Lang Carriage Co., Cleveland, O., will erect an unusually handsome garage and store room on property recently purchased at the corner of Euclid and E. 100th street.

The new factory building at Leominster, Mass., of the F. A. Whitney Carriage Company is nearly completed. The building is 90 x 40 feet and a story and a half high. The cost is about \$7,500.

A splendid addition to the factory zone of Long Island City, N. Y., will be the \$50,000 plant to be erected at Beaver street and Star avenue by the General Vehicle Company. The height will be six stories and the dimensions 75 x 327 feet.

The Canadian Wheel and Wagon Company, which has for some time been preparing to manufacture in Van Couver, B. C., has purchased a ten-acre factory site on the C. P. R. at Fraser Mills, and construction work will begin at once.

The South Georgia Buggy Co. has completed its new quarters at Valdosta and is now comfortably located. The new factory is a modern four-story building 50 x 180 and contains over 30,000 square feet of floor space. It is said to be one of the finest carriage factories in the south.

Harry Welland, carriage manufacturer and automobile dealer, Cincinnati, O., is to improve his property on Gilbert avenue, south of Curtis street, by the erection of a two-story brick, composition roof, and structural iron and cement building, to occupy ground space of 43 x 51 feet. The plans for the structure embrace a public garage and salesroom, and will cost about \$7,500 or \$8,000 to build.

## BUSINESS CHANGES

Fred Pierson has purchased the P. J. Wilson business in Springport, Mich.

E. M. Leach has purchased the Romine stock of implements and vehicles in Maxwell, Neb.

The Kennedy Wagon Co., Seattle, Wash., has decreased its capital from \$30,000 to \$10,000.

Beebe & Wallace have purchased the stock of vehicles, etc., of C. F. Bucher, in Stafford, Kas.

J. A. Quigley has sold out his vehicle and hardware business in Buckley, Mich., to James Cook.

Gilmore & Sons have purchased the stock of vehicles, etc., of Stuber & Stiles, in Woodward, Ia.

Peter and John Graff have purchased the stock of vehicles, etc., of Louis Kroll, in Mapleton, Ia.

George Vale, of Fall, has purchased the stock of vehicles, etc., of P. O. Boom, in Eudora, Kas.

S. Toomey Co., of Canal Dover, O., which has been a partnership firm manufacturing carriages, has been incorporated

with \$60,000 capital, by Ralph I. Toomey, S. J. Brister, Maurice C. Toomey and Oliver Toomey.

R. E. Mayhew has disposed of his stock of buggies, etc., in Vermillion, Kas., to W. H. Sunderland.

G. A. Sissell has disposed of his stock of vehicles and implements in Cuba, Kas., to J. G. Bachelor.

V. F. Nelson has just purchased an interest in the business of C. J. Lucken, in Cooperstown, N. D.

Albert Lederer has disposed of his stock of vehicles, etc., in Dillon, Kas., to Sandow & Herrington.

The Joseph C. Parker Company succeeds J. C. Parker & Son in the vehicle business at Middletown, Del.

E. J. Martin has purchased the stock of vehicles and hardware of Samuel Lew & Co., in Harper, Kas.

Christenson & Pfister have succeeded to the vehicle business of Christenson & Lund, in Preston, Minn.

F. W. Sprung has purchased the old Boyd & Daily stock of vehicles and implements in Le Roy, Minn.

Prior & Jaskowiak have purchased the stock of vehicles and implements of E. W. Cullen, in Winslow, Neb.

J. C. Eimers has succeeded to the vehicle and implement business of Eimers & Wood, in Grangeville, Idaho.

The Louisville Auto & Wagon Co. has succeeded to the business of the Wieland Co., in Louisville, Ky.

R. P. Cunningham, of Tingley, Ia., has purchased the Nelson & Hoegh stock of vehicles, etc., in Atlantic, Ia.

Mr. Barringer has succeeded to the vehicle and hardware business of Persinger & Barringer, in Oak, Neb.

E. H. Innian has disposed of his stock of buggies, etc., in Olivet, Kas., to D. B. Lowery, of Fredonia, Kas.

Jesse Evans & Sons have purchased the stock of hardware and vehicles of Emery & Harper, in Kinsley, Kas.

Mr. Benson has succeeded to the vehicle and implement business of Benson & Combellick, in Gettysburg, S. D.

R. C. Brown, of Iola, Kas., has purchased the Chase stock of vehicles, etc., from Moble Bros., of Sterling, Kas.

Crow & Patterson have succeeded to the vehicle and implement business of Herman Rehberg, in Bennington, Kas.

N. G. Robertson, of Hutchinson, Kas., has purchased the stock of vehicles, etc., of Hartman Bros., in Preston, Kas.

W. J. Rawlings has sold his interest in the Kingsbury & Rawlings carriage shop, at Bellefontaine, O., to his partner, Wm. Kingsbury.

W. S. Tooley & Son have disposed of their stock of vehicles, etc., in Minden, Neb., to A. C. Christensen & Son, and will be under the management of Harry Christensen.

## NEW FIRMS AND INCORPORATIONS

Wm. Wenk has begun work on a new vehicle repository in Creston, Neb.

C. F. Ewert is about to engage in the vehicle business in Columbus, Neb.

C. E. Wright & Co. are building a plant in Norfolk, Va., to manufacture vehicles.

E. T. Kamrud has opened in the vehicle and hardware business in Makoti, N. D.

Roy McKenzie has engaged in the vehicle and implement business in Onaway, Mich.

The Ohio Valley Buggy Company, of Aurora, Ind., has been granted a permit to do business in Texas with principal office at Dallas; capital stock, \$10,000.

The Closson Lunch Wagon Company, of Westfield, N. Y., has just been incorporated with a capital of \$35,000, by Ernest

L. Tiffany, of Syracuse; Edgar T. Welch, of Westfield, and Earle E. Cookson, of Olean.

Hussell & Gibbs have recently added a line of vehicles to their business in Kingston, Ia.

M. L. Carter is organizing a company in Princeton, W. Va., to establish a wagon factory there.

The Walker-Weiss Axle Co. has been incorporated in Flint, Mich., with a capital stock of \$150,000.

E. M. Highland has opened a stock of vehicles, hardware, automobile accessories, etc., in Cleveland, Ohio.

Sewell & Carter, of Burlington Junction, Mo., have opened a branch in Marysville, Mo., with J. H. Sewell in charge.

J. R. Alley, Jr., of Mercer, Mo., is about to open a new vehicle and implement house in Princeton, Mo., with O. K. Gloschen as manager.

Century Wagon Company, Beaumont, Texas, capital stock, \$2,000, has been incorporated by William G. Carroll, Charles L. Berly and H. J. Jirou.

### FIRES

Fire destroyed the Parker buggy plant at Suffolk, Va., November 2.

The stock of vehicles, etc., of A. L. Hare, in Norcature, Kas., has been burned.

The stock of vehicles, etc., of T. C. Preble, in Fairbury, Neb., has been destroyed by fire.

The Magner carriage plant, at Boise, Idaho, was totally destroyed by fire, October 14. Loss, \$2,500.

The spoke factory of G. F. Weis, at Wheatley, Ark., was destroyed by fire, October 13. Loss, \$7,000.

The stock of buggies, etc., of Schollfield & Nix, in Sunset, Texas, stored in their warehouse, has been burned.

The storehouse of H. C. Becker's carriage shop at Troy, N. Y., was destroyed by fire, October 9. Loss, \$10,000.

The carriage factory of Welch, Dwyer & Grady, at Boston, Mass., suffered a fire loss of about \$6,000, on October 16.

### BUSINESS TROUBLES

United States Judge William L. Day, October 24, appointed Frank Butler, of Cleveland, receiver for the Ohio Auto Carriage Co., Ralph Goldsworthy, proprietor, at the request of creditors who filed bankruptcy proceedings in federal court.

Judge Hand has appointed the Central Trust Company of Illinois auxiliary receiver for the property in New York City of the Grabowsky Power Wagon Company of Illinois, which has a garage and branch place of business at 245 West Twelfth street. The assets in this plant are estimated at \$50,000.

A receiver was appointed by Federal Judge Landies, October 23, for the Streator Motor Car Company, automobile manufacturers at Streator, Ill. Creditors alleged that the firm is insolvent. The Central Trust Company was made receiver in bonds of \$50,000. Petitioning creditors seeking adjudication of the manufacturing firm in bankruptcy were the Tuthill Spring Company, David Lewis, William Friedman, and the Michigan Engine Valve Company. Liabilities of the company are said to be about \$250,000 and assets approximately \$200,000.

### CHANGE OF OCCUPATION

Jesse L. Nelson, secretary of C. H. A. T., and in his private capacity formerly engaged with the Barndt & Johnson Co., Columbus, Ohio, is now located in Brooklyn, N. Y., in the solid and truck tire department of the Goodyear Tire & Rubber Co., of Akron, Ohio.

For those of you who have hickory handles in stock and are afraid of damage from insects, here is a tip: A pioneer handle man says that a spraying with coal oil will prevent it.

## RECENTLY EXPIRED PATENTS OF INTEREST TO THE VEHICLE INDUSTRY

### Patents Expired September 10, 1912

545,874—**Thill Coupling.** Charles F. Buchanan, Alpena, Mich.  
545,946—**Hub-attaching Device.** Henry M. Cromer, Moscow, S. C.

546,008—**Thill Coupling.** William E. Ferguson, Little Rock, Ark.

546,072—**Hub.** Charles O. Metzler, Holden, Mo.

546,176—**Hub-attaching Device.** Conrad Miller, Leadville, Colo.

546,268—**Thill Coupling.** Peter Broadbrooks, Batavia, N. Y.

### Patents Expired September 17, 1912

546,230—**Vehicle Wheel Rim.** Frank J. Goodrich, Belvidere, Ill.

546,346—**Wagon.** Samuel D. Reynolds, Rochelle, Ill.

546,366—**Carriage Washing Device.** Charles G. Trefethen, Taunton, Mass.

546,430—**Vehicle Gear.** Norman A. Palmer, Clarksburg, O.

### Patents Expired September 24, 1912

546,705—**Concealed Joint for Carriage Tops.** Herbert C. Martell, Columbus, O.

546,764—**Wood Rim for Vehicle Wheels.** Clements A. Greenleaf, Greencastle, Ind.

### Patents Expired October 1, 1912

547,020—**Wagon Brake.** Orrin H. Munson, Hartsville, Mass.

547,023—**Wheel Hub.** Martin N. Narum, Milwaukee, Wis.

547,055—**Tire and Felly Clamp.** George Willing, Broken Bow, Neb.

547,291—**Thill Support.** Charles A. Rotthouse, Brandywine Hundred, Del.

547,357—**Wheel.** Chilion T. Pelton, Riverside, Cal.

### Patents Expired October 8, 1912

547,570—**Thill Coupling.** James C. Walker, Alpena, Mich.

547,692—**Vehicle Gear.** Edward I. Tennant, Springfield, O.

547,722—**Thill Coupling.** Joel Johnson, Sunny Side, Ark.

547,729—**Thill Coupling.** William A. Lucas and Lewis P. Mooney, Fremont, Neb.

547,754—**Combined Thill Coupling and Horse Detacher.** Robert W. Howell, Indianola, Iowa.

The above lists of patents, trade marks and designs of interest to our patrons are furnished by Davis & Davis, solicitors of American and foreign patents, Washington, D. C., and St. Paul Building, New York City.

## HIGH-RECORD IMPORTS OF MANUFACTURERS' MATERIALS

Importation of manufacturers' materials into the United States is larger in 1912 than ever before. That the manufacturers of the country are busy is evidenced by the fact that the importation of that class of their raw materials which they draw from other parts of the world exceeds in 1912, in nearly every instance, that of the corresponding period of any earlier year. Figures just completed by the Division of Statistics show, for example, that the importation of hides and skins in the eight months ending with August, 1912, amounted to 409 million pounds, against 278 million in the corresponding months of 1911, 350 million in the corresponding period of 1910, and 357 million in the corresponding months of 1909, the former high-record year in the importation of this class of manufacturers' materials. In India rubber the imports are also larger than in the corresponding eight months of any earlier year, 79 million pounds, against 50 million in the corresponding period of 1911 and 66 million in the same period of 1910.

Fibers (under which term are included hemp, jute, flax, sisal, and other fibers of this character) show a total of 261 thousand tons in eight months of 1912, against a former high record of 250 thousand tons in a like period of 1909.

The total value of all crude materials imported for use in manufacturing was in the eight months ending with August, 1912, \$418,807,359, against \$343,623,436 in the corresponding months of 1911 and \$376,459,109 in the same months of 1910; and of manufactures for further use in manufacturing, \$202,477,008, against \$190,461,568 in the same months of 1911 and \$191,567,891 in the same months of 1910.

## OBITUARY

**Wm. C. Knoch**, 71, formerly a wagon manufacturer at Butler, Pa., died October 26.

**Peter Anderson**, 72, at one time a carriage builder in York, N. Y., died October 21.

**Edward Tilton**, 68, a former carriage builder of Phillipsburg, N. J., died October 24 of heart trouble.

**I. Harrison Mulford**, 84 years old, formerly a carriage manufacturer, died at his home in East Orange, N. J., October 12, following an illness of a week with bronchitis and heart trouble.

**Daniel Meader**, 81, thirty years ago a member of the firm of Emmerich & Meader, manufacturers of carriages, Watertown, N. Y., died in that city, November 3, after an illness of two weeks.

**Henry H. Burgess**, 63, died November 2 in an ambulance on the way to a hospital in Syracuse, N. Y. He was at one time in the carriage business in his native town, Flint, Ontario county, N. Y.

**William Hooker Atwood**, 66, carriage builder of international reputation and president and treasurer of the New Haven Carriage Co., died at his home in New Haven, Conn., on October 26. Mr. Atwood was born in New Britain, Conn., and was a nephew of Henry Hooker, the founder of the house of Henry Hooker & Co., New Haven. He associated with the company for twenty-three years, being at one time manager of the New Orleans branch. He traveled very extensively for the company selling its product largely in the United States, Canada, Cuba and South Africa, and was considered an expert in all matters pertaining to the trade. Mr. Atwood was one of the judges on the International Jury of Awards for Transportation, at the big fair in Chicago in 1893, and also at the St. Louis World's Fair. He was for a short time with A. B. Perrin, Buffalo, N. Y., but shortly after the Chicago World's Fair, in 1893, he became associated with the New Haven Carriage Co., as its secretary, then vice-president and treasurer, and in 1907 became president and treasurer of the company. He was one of the first carriage manufacturers to engage in the manufacture of automobile bodies, beginning with the electric carriage in 1900, and soon became well known in that industry. He was one of the leading carriage manufacturers of his time, devoting practically all this time and energy in that direction.

### JOHN COLYER

John Colyer, head of the house of J. Colyer & Co., of Newark, N. J., passed out of this life October 6 in his 71st year. Heart failure was the immediate cause of dissolution. The funeral was held on the 9th. He leaves a widow and two sons, J. Whitfield Colyer and Edward E. Colyer, who will continue a long established and locally famous coach building business.

Mr. Colyer was born in Newark, September 16, 1842, and lived in that city during his life. He was the oldest living of four brothers.

After several years devoted to learning the business he assumed active management.

Mr. Colyer was a much respected member of the trade more than locally. He was one of the old members of the Carriage Builders' National Association, and a member of many benevolent, charitable and civic bodies.

### NEW JOB

E. V. Stratton has secured the services of H. R. Fletcher. Mr. Fletcher will have charge of the sale of Flanders trucks, Stratton's company being distributors of the Flander's line for eastern New York, western Massachusetts and Vermont.

## TIRE AND WHEEL WIDTHS

The question of wide or narrow tires is of more moment than many upon first thought consider it. It is a question of administration which concerns maintenance. Road maintenance is no small consideration; in fact it is second only to construction. Wide tire regulations are not a new idea nor a wild notion of reform. All of the European nations having good roads prohibit the use of narrow tires. The width of tire is regulated according to the load that the wagon is designed to carry; the heaviest loaded wagons having tires as wide as ten inches. Austria requires tires of not less than 4 1/3 inches in width; France, from 3 to 10 inches, depending upon the load; Germany, not less than 4 inches; Switzerland, a minimum width of 6 inches.

It is generally supposed that narrow tires destroy only roads of a soft or yielding character, but the same action that occurs on a soft road takes place only in a much less degree on the hardest pavements. The principle of the tire is the same as putting a hard surface on the road or as that of snowshoes. The sinking action is prevented by distributing the weight over a large area. The sinking of wheels into a road surface is due to the fact that the road is too soft and the wheels too narrow for the load they carry. The universal use of wide tires would have more tendency to compact and iron down the road surface than that of the narrow tires. Wide-tired wagons draw materially lighter over almost every kind of a road than those with narrow tires where the wide tires are universally used.

A test of tire width was made at Atlanta, Ga., in 1895, in which wagons of equal weight and loads were drawn over a wet piece of clay road, one wagon having two-inch tires and the other four-inch tires, and with rear wheels farther apart than the front wheels. Twice as much pull was required on the two-inch tired wagon as for the four-inch, and that part of the road traversed by the two-inch tired wagon was cut and rutted to a depth of several inches, while the four-inch tires had rolled the road to a smooth, firm surface. At the agricultural station of Utah it was found that a one and one-half inch tired wagon drew about 40 per cent. heavier than a wagon with three-inch tires. Loaded with 4,480 pounds, the wide-tired wagon could easily be hauled over an earth road in good condition by two horses, while one-half as much was a full load for two horses with the narrow-tired wagon.

## Wants

Help and situation wanted advertisements, one cent a word; all other advertisements in this department, 5 cents a word; Initials and figures count as words. Minimum price, 30 cents for each advertisement.

### PATENTS.

**Patents**—H. W. T. Jenner, patent attorney and mechanical expert, 608 F St., Washington, D. C. Established 1883. I make a free examination and report if a patent can be had and exactly what it will cost. Send for circular.

### SITUATIONS WANTED

**Wanted**—By a man with practical experience as body designer, superintendent and salesman, position with body concern as superintendent; east preferred. Address "Practical," care The Hub.

**Automobiles**—Experienced wheel maker in all branches, can take charge of department, also tend machinery and repairs. Prefer job in the vicinity of New York. Box 30, care The Hub, 24 Murray street, New York.

### FOR SALE

**For Sale**—One Elliott dash stitching machine in good order. Write G. H. Daugherty, 218 Allen Boulevard, Kalamazoo, Mich.

# EVERY·AUTOIST·A·CUSTOMER·&·EVERY



**T**HAT'S what you want, friend DEALER, and that's good news involved in the handling of

## THE RACINE AUTO TIRE

We'll tell you why!

**BECAUSE**, your customer will not be worried by seeking to avoid the many sharp things that puncture other tires, for they won't puncture **THE RACINE** as it takes a pressure of over 4,000 pounds to puncture the chrome tanned leather outside jacket.

**BECAUSE**, your customer will find it unnecessary to carry that extra tire; four good revolving tires (**RACINE AUTO TIRES**) being all he will need.

**Is your  
business  
sick?**

**I am the doctor**

When your body is sick you go to a physician. Why? Because his training and experience has taught him how to cure you. When your business is sick why not go to a business doctor—who has been trained to treat such troubles?

Ask me to show you the testimonials I have received from men like yourself who have used my treatment successfully.

I can show you how to advertise your business in such a way that all your worries will cease and you will be able to look forward to years of peace and plenty. Write me today asking me all about it.

**DUNDAS HENDERSON,**

The Hub, 24 Murray St., N. Y. City.

I construct catalogues, booklets, newspaper ads, circulars, form letters, and all kinds of advertising and selling literature. I have fifteen years experience at this work and hundreds of testimonials from people like yourself. My prices are not cheap but, oh my! you should see the results I can get you. What can I do for you today?

# CUSTOMER·A·SATISFIED·CUSTOMER

BECAUSE, those cup-like studs that you see in our illustration will grip the ground just where, and just when, the ground needs gripping; so that he is free from the danger of skidding and slipping.

BECAUSE, his tire EXPENSE account will show a difference such as will cause him to talk enthusiastically to others about you and the RACINE AUTO TIRE.

All this counts for good business; so get busy. The RACINE AUTO TIRE is going into the hands of live, pushing dealers. We shall make it equally advantageous to them as to us. Be amongst the live ones. Take our proposition. Do it now; and together let us do it thoroughly.

## RACINE AUTO TIRE COMPANY

500 14th Street

RACINE, WISCONSIN



## IF YOU USE MONARCH BULL DOG REMOVER

You Know the Value of Time

By its use you remove all traces of the previous finish [*Varnish, Paint, Shellac, and air-dried or baked Enamels*] and at the same time give your attention to other work. . . . .

## MONARCH BULL DOG REMOVER

Works without injury to the wood or operator, and will remain moist from TEN to TWENTY - FOUR HOURS. . . . . *May we send you sample and descriptive booklet?*

## CHAS. H. GILLESPIE & SONS

Jersey City

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VARNISH MAKERS since 1824



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You no longer need to worry about how you are going to get rid of cracks in old paint and varnish. Roughstuffs, putties and lead glazes, none of them will do the work.

#### Johnston's "KRAKNO"

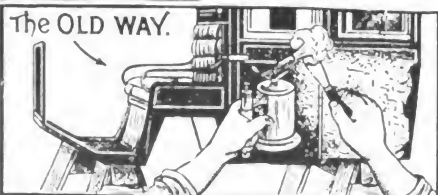
does more than fill the cracks; it permanently seals them and affords a perfect base for succeeding coats. For carriage and automobile repainting there is nothing to equal it.

#### The Most Reliable of All Surfacers and Fillers

Carriage builders and painters all over the country are using "Krakno" constantly with satisfactory results. Made in slate, red, yellow and white. Write for prices.

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WE HAVE—FOR FORTY YEARS  
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**WHEELS OF QUALITY**

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Motor Trucks

OF THE HIGHEST STANDARD OF QUALITY

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**VEHICLE FINISHES**

A PRODUCT FOR EVERY PURPOSE, PRODUCING DISTINCTIVE RESULTS

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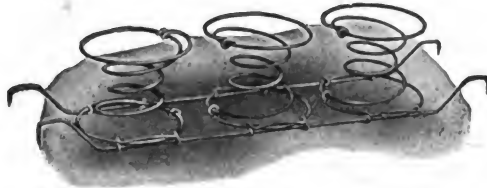
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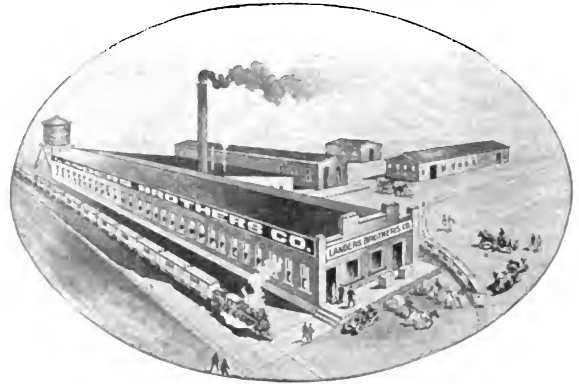


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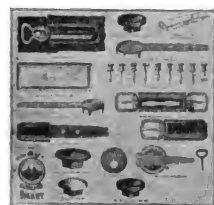
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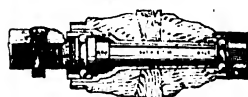
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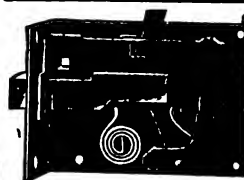
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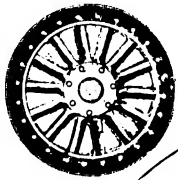
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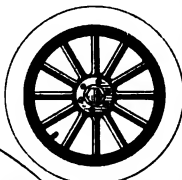
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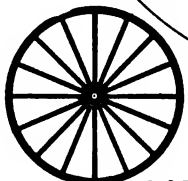


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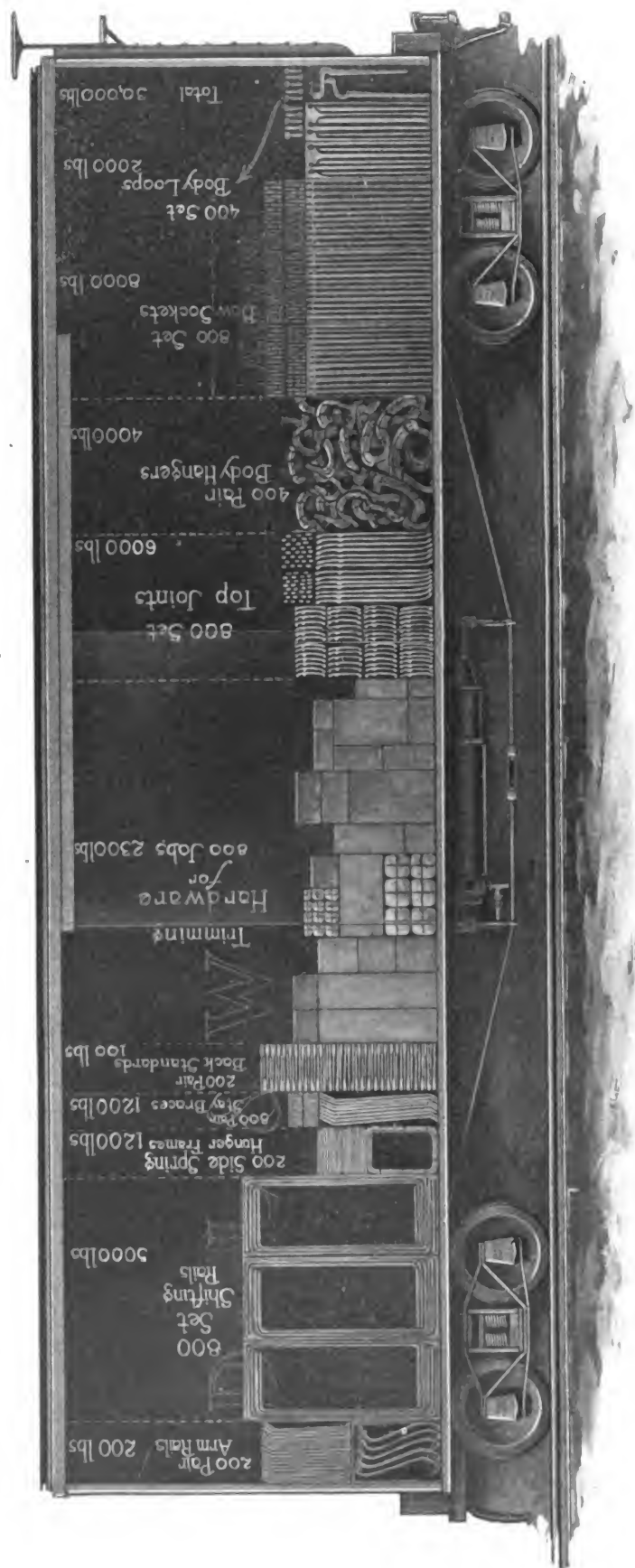


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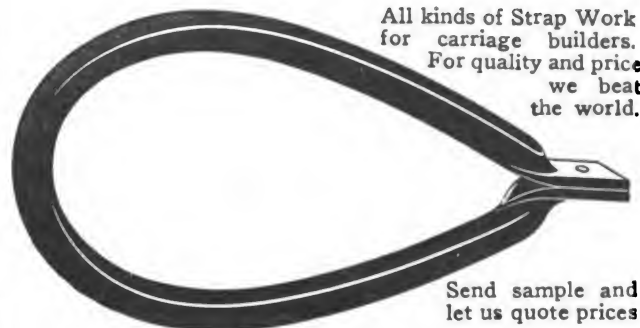
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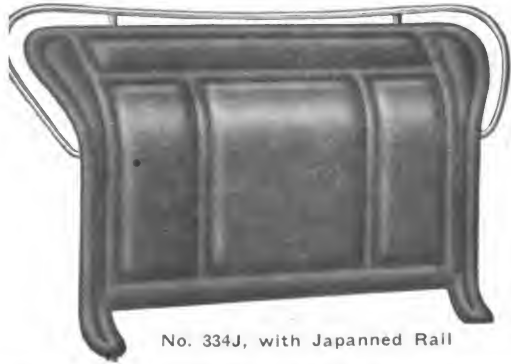
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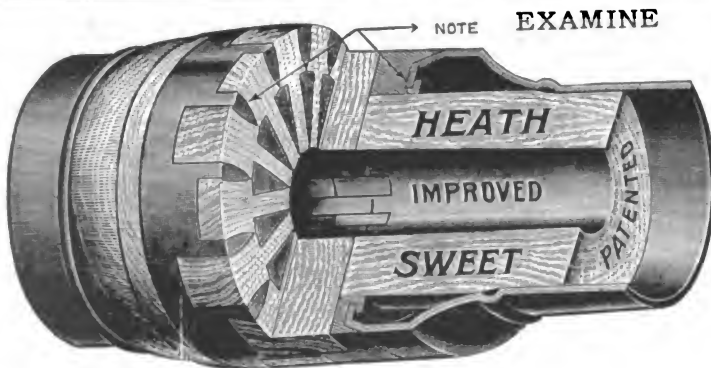
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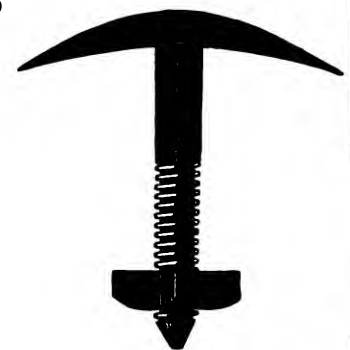
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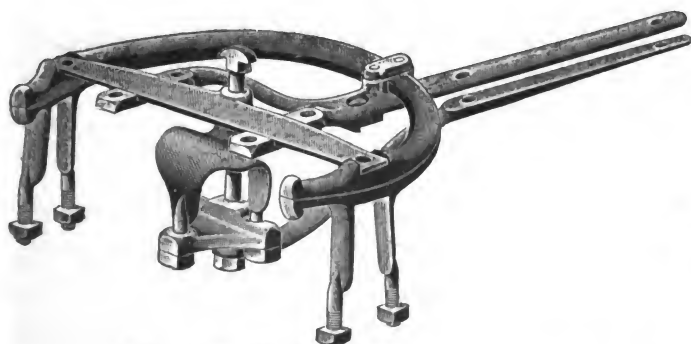
**Chicago,**

**Minneapolis,**

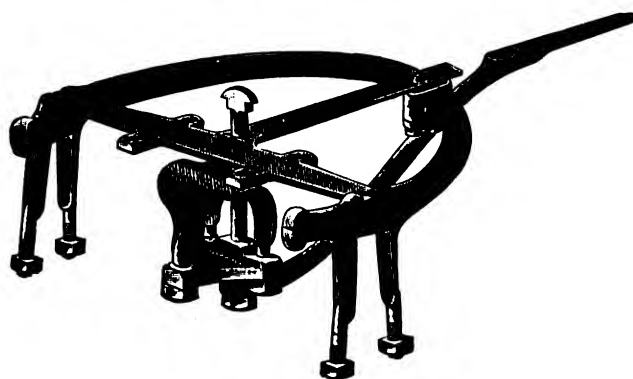
**Kansas City**



# HEADQUARTERS FOR SPECIAL FINE GEAR IRONS [Dropped Forged] CARRIAGE HARDWARE



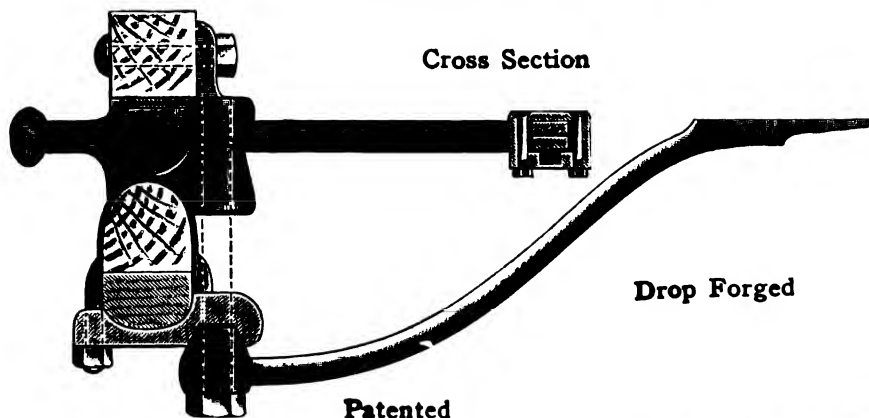
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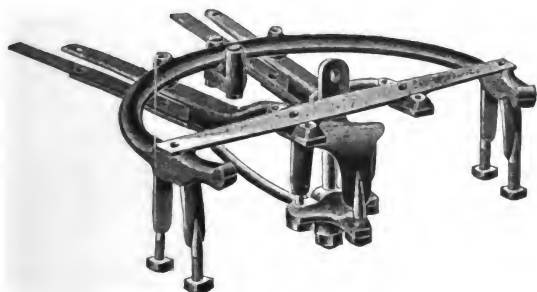


Cross Section

Drop Forged

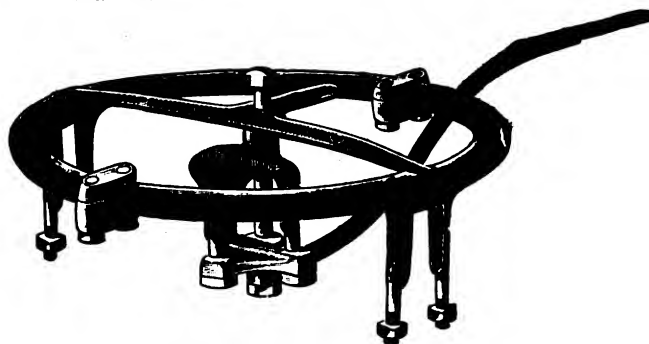
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No. 1905—Gear Iron

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No. 1909—Concord.

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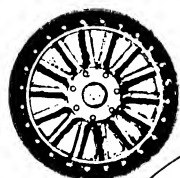
We'll tell you why!

BECAUSE, your customer will not be worried by seeking to avoid the many sharp things that puncture other tires, for they won't puncture THE RACINE as it takes a pressure of over 4,000 pounds to puncture the chrome tanned leather outside jacket.

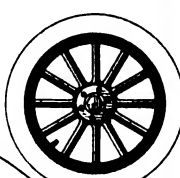
BECAUSE, your customer will find it unnecessary to carry that extra tire; four good revolving tires (RACINE AUTO TIRES) being all he will need.

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### AUTO



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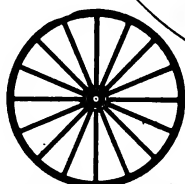


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BECAUSE, his tire EXPENSE account will show a difference such as will cause him to talk enthusiastically to others about you and the RACINE AUTO TIRE.

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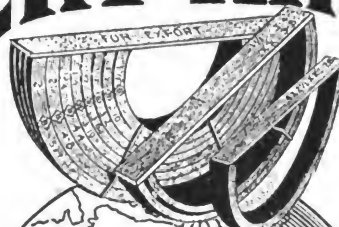
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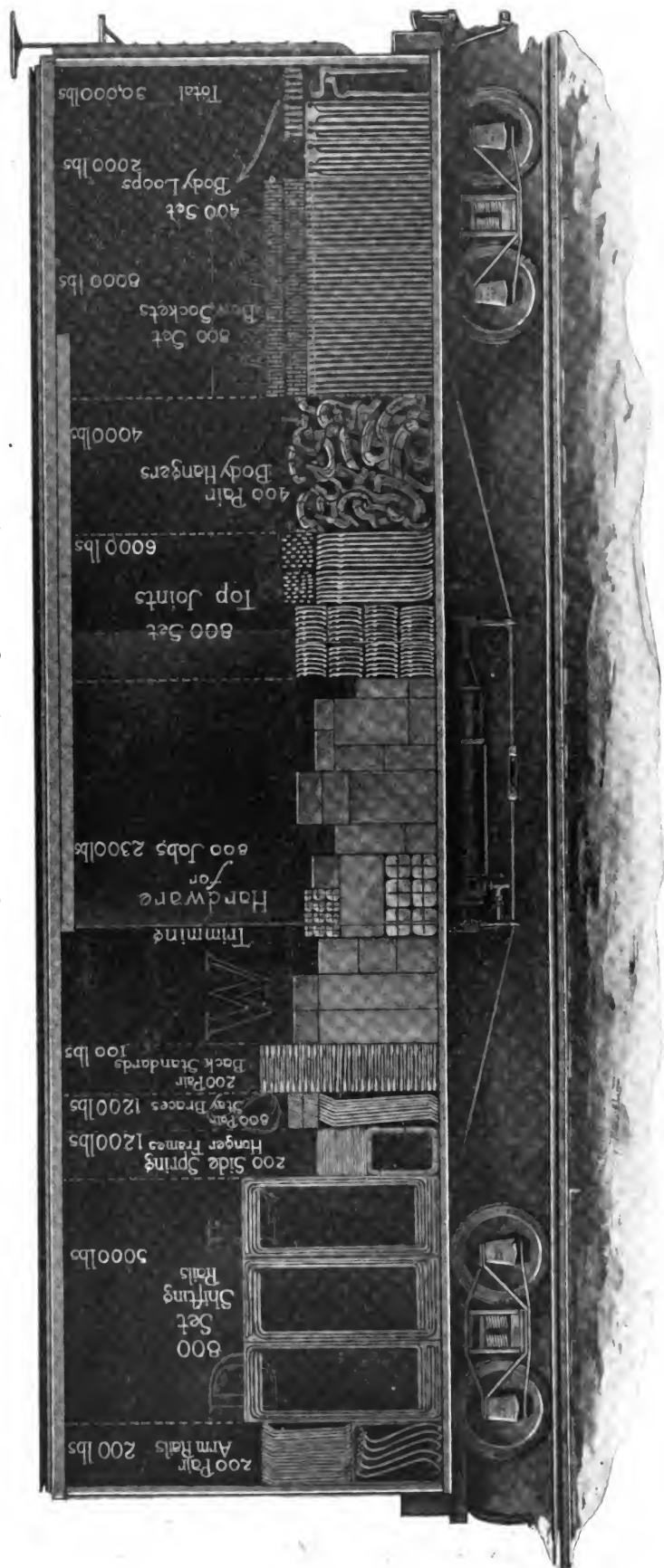
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Cincinnati and vicinity

**Melville Ritchie,**

1932 West 8th St.,

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Central States

**A. E. Roninger,**

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**Cortland Carriage Goods Co., Cortland, N Y., U. S. A.**



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*Murphy Palest Motor Car body,*  
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NEWARK,  
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# The Hub

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Entered in the New York Post Office as Second-class Matter

Vol. LIV

DECEMBER, 1912

No. 9

## THE TRADE NEWS PUBLISHING CO. OF N. Y. Publishers of THE HUB

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For advertising rates, apply to the Publishers. Advertisements must be acceptable in every respect. Copy for new advertisements must be received by the 25th of the preceding month, and requests to alter or discontinue advertisements must be received before the 12th day of the preceding month to insure attention in the following number. All communications must be accompanied by the full name and address of writer.

### FOREIGN REPRESENTATIVES:

FRANCE.—L. Dupont, publisher of *Le Guide des Carrossiers*, 78 Rue Boissiere, Paris. Subscription price, 15 francs, postpaid.  
GERMANY.—Gustave Miesen, Bohn a Rh. Subscription price, 12 marks, postpaid.  
ENGLAND.—Thomas Mattison, "Floriana," Hillside Avenue, Bitterne Park, Southampton. Subscription price, 12 shillings, postpaid.

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## The Sales Manager.

It is only very recently that we have heard the word sales manager, or known the individual in the vehicle industry, or at least that part of it which holds to the old established precedents and practices. But he is coming into bloom here and there all over the patch these days, and is a most important personage. He is not yet so overdone, so cooked on both sides, in the carriage trade, horse-drawn, as he is among our cousins, the gas car makers. There he is a thing of beauty and function, and as necessary to make things move as a sparking plug.

As yet these other buggy makers are getting along with the heads of the house doing the managing, and they are getting along quite well, even to the extent of 60,000 and sometimes more buggies per year. There is quite some powder burned, and pin-wheels set revolving and sputtering when so many automobiles are turned out by one factory—and properly so because it is an achievement. But somehow the machinery to make them stay sold is so much more expensively elaborate. The sales managers and their staffs are like an army with banners.

But we intensive Americans always go the whole figure when we take up new fancies, and we may make

much more rapid progress, but it remains yet to be proven.

In Europe the sales manager is as common as green peas, he is indigenous to every country, but catch him raising the fuss and making the noise our variety makes!

In England, for example, he gets to his desk about 9:30 in the morning, has to stop to eat and rest between 12 and 3, and quits for the day at 5.

In Vienna he gets busy at 9. But he goes home at 1 for luncheon and a nap. Has coffee at a cafe at 3, and gets back to his desk about 4, and stays until 5 or 6.

Our methods don't seem like living at all, so they are not thinkable to the man who does not regard his work—business—as before all else in this world.

But these foreign chaps do very well indeed, thank you, have lots of cash, and it must be a patent conclusion that they get more enjoyment out of life than a man who has but three objectives in life, bed, breakfast, business!

We are expecting to see the horse part of the vehicle trade fall into the fashion, and look expectantly for the sales manager, even though the proprietor has to tack the name on the door of his own private office, and thus be in the procession of progress—a company that often takes many steps, but does not cover much advanced ground.

## Waste in the Stack.

The factory stack is a fine dividend consumer and profit sharer. Many a buggy man can look out of the factory windows and see himself burning up money.

Under fair conditions of combustion the flue gases should contain about twelve per cent. of carbonic acid gas, but more often contains only three. This, calculated on a ton of coal, burned under the three per cent. condition, means that about fifty-two tons of excess air are heated to the high temperature of the flue gases.

The flue gases ought to be analyzed, the draft regulated by the per cent. of acid found, and the money that goes up in smoke saved for the fun of saving more than you spend. In such matters the chemist becomes the manufacturer's right hand man, and he ought to be called in much oftener than he is.

But the man of action does not admire the man of theory, so the chemist is not around as much as he should be.

We are quick to scrap the whole works if we find something to do the work better and quicker. We see the point. We can see the point of speeding labor by the many new fangled ideas such as piece work, bonuses,

motion studies, gang organization, etc. We can put in to the office on sight more adding machines, typewriters, time recorders, memory ticklers, duplicators, or what not, because we understand, we get the point, and we want what we see. But as chemistry is an unknown to the average manufacturer he does not want any such gentry teaching him his business.

Here is where our German cousins put it all over us in the trade game. They are first cousins to every chemist, and want him in the shop as soon as he can enter the door. What is the result? Better, more, and more cheaply made goods are turned out in Germany than in any great manufacturing land, and all because they have a horror of waste—don't want to see the pfennigs go up the stack in smoke.

## The Flow of Gold Keeps Up.

The South African gold fields, during eight months of 1912, turned out the value of \$125,560,000 in gold, nearly fourteen millions more than same time last year. It is no wonder price inflation is world-wide when such a river of yellow metal is watering all values, hence prices must inflate.

## Dollar Doings.

We know all about "dollar diplomacy" through the news of the day. The dollar now is agitating for a "national budget" that shall be presented to Congress. The idea is to get into the hands of legislators a clearer view of fiscal needs, based upon some proper calculation of such needs. The Commission on Economy and Efficiency is busy with the matter.

It will be hard to budge the government from old and wasteful habits of expenditure, but the power and influence of the dollar is getting stronger each day.

Turin in Italy is a spotlight center for the production of the splendidly made Italian motor car.

The total output for 1911 was 4,235 against 3,700 in 1909.

Do not these figures look small when we think of the output of our shops?

The Fiat easily leads with 1,800, Itala comes next with only 630, and so on down to Aquila making only 55.

Six thousand workers built the cars.

The carriage wagon painter is a user of gold leaf in quantity.

We find there are 88 shops making it, and that the capital is over one million dollars. More than 1,500 men are gold beaters, and the material (pure gold) amounts to as much as the capital, while the money received for the leaf is pretty nearly double the capital.

We import gold beaters' molds and skins, mainly from England, as it sells us about 24,000 dollars worth of the 29,000 dollars' worth we use.

## BEAR IT IN MIND

To find the weight of castings multiply the cubic inches by 0.27 for iron, 0.29 for steel and 0.30 for brass.

## PRESIDENT HULL'S DINNER

President Charles C. Hull, of the Carriage Builders' National Association, gave the customary "President's Dinner" to the executive committee, and his personal guests.

The dinner was given on the evening of November 22, at the termination of the meeting of the executive committee, as is the custom, at the Hotel Astor in New York City.

The guests were J. D. Dort, Theodore Luth, O. B. Bannister, C. H. E. Redding, R. C. Ware, Daniel T. Wilson, W. H. McIntyre, Lewis Straus, C. O. Wrenn, W. H. Roninger, W. A. Sayers, Carl P. Schlamp, Charles A. Lancaster, G. W. Huston, Andrew F. Johnson. Those unavoidably absent were G. A. Brockway, Hon. Franklin Murphy, T. M. Sechler, Henry C. McLearn.

The dinner was well served and the spirit of the occasion was in full force almost instantly.

When the cloth was cleared, and the "talks" began, there was a lack of formality and a gay spirit, more like a clover club or gridiron function that took away all formality and coldness. This, of course, made the time go all too swiftly.

There was a good deal of joshing and some of it had happy and surprising results. For instance, during one of the times when the professional entertainers were quiet, some one accused Mr. Roninger of being a sweet whistler, the equal at least of the famous Mrs. Shaw. Nobody believed it, but judge of the surprise of all when the St. Louis delegate really did "do" the Mocking Bird and another selection in a way that was a delightful surprise, establishing a reputation for the committeeman he will never be able to deny in future when called upon.

Some one said George Huston was really an understudy of Caruso, and in view of the previous surprise, he was almost forced to get up and yelp, notwithstanding all his bashful protests that things were not what they seemed.

This dinner was the first instance in the whole history of these functions when the trade press was recognized in the persons of some of its representatives—a very graceful and deserved compliment, and an innovation that might be made permanent to advantage of all.

These dinners are very interesting in many ways. At first they were merely the expression of good will on the part of the new president, and had no obligation of precedence. By degrees they have grown into a custom—an unwritten by-law—so that the new man for president knows his "dinner" is a part of his official function.

They have always been given in New York City at the conclusion of the fall meeting of the executive committee of the association, and there is hardly a club, famous restaurant, or big hotel that has not prepared the feast at one time or another.

Some have been very elaborate, regular Lucullus affairs, others have reflected other ideas or idiosyncracies of the host of the occasion, but the ones that have lingered longest in the memory were those where the spirit of the diners was free, frolicsome, and the jest and counter jest were like vocal fireworks.

This was mainly a characteristic of the earlier dinners, and the recrudescence of the same spirit in this latest one of President Hull gives bright promise for the future that the old spirit will reincarnate.

## CARRIAGE MAKERS' CLUB MEETING

Members of the Cincinnati Carriage Makers' Club held their regular meeting at the Business Men's Club the evening of Nov. 14. Addresses were delivered by William T. Johnson and William P. Rogers, dean of the Cincinnati Law School. Dean Rogers discussed the relation of business and law based on the principle of morality, confining his remarks to moral conduct in all fields of commercial endeavor.

# Body Designs Shown at Olympia

**Mr. Thomas Mattison, The Hub's English Representative, Reviews  
the Trend of Best Foreign Body Styles at England's Great Show**

The Motor Car Show which was held at Olympia has become an annual institution.

This year's show, which opened in the middle of November, was the finest exhibit that has ever been held in London—or in any of the Continental cities that have become centers of motor car style and engineering improvements.

The 350 motors on the stands in the exhibition conveyed in a signal way the impression that there was a vigorous and throbbing vitality at work, and an emulative life that shattered the libel that the Britisher is always in all things a long way behind the rest of the progressive world.

The most eminent carriage building firms in London and the provinces sent of their best efforts. The world, as visitors, acted as judges in so far that almost every exhibitor spoke well of having done growing business, which is the correct measure of the commercial value of each individual vehicle exhibited, while to the lover of art in mechanics the cars were a feast of excellence to behold.

## Nothing New in Essence

In the style of bodies throughout the show there were no new departures. There were alterations in plenty, which in themselves did not materially affect the designs in their individualisms, though they added grace to their facial and general deportment.

There were no improvements that distinctively proclaimed themselves as to merit the description of being a "new design." There were no new vehicles—no thorough creations in a field where there is unlimited room, and a freedom from the corrosion of trade domination as in the days before the motor car's coming.

The show taught the lesson that while it was an assembly of the finest craftsmanship, and the grandest show that the world has ever seen; and proclaimed the super excellence of British workmanship, yet there was a dearth of the life of the designer. The tendency in the lines was to a general sameness, and an application of the hackneyed phrase of "robbing Peter to pay Paul."

The British motor carriage builder is master of constructive workmanship, something he lacks in constructive designing. The production of other people's designs as served up in colored and half tone drawings in English journalism is degrading, while it acts as a leveler in its educational mediocrity.

The exclusive profession of a motor car body designer is in every way as essential as a builders' architect, or a naval architect, or that of a consulting engineer, and the British motor body builder will act wisely in strengthening this weak spot in his productive armor.

## Minor Improvements

The improvements in head mechanism were many and ingenious in landaulette and open car heads. The inventors' direction took that of making the head mechanism fold in lapping simplicity, and at the same time foreshorten itself when the head is down, thus curtailing the leverage extension beyond the back of the body when used as an open car.

Door glass frames in the wood stand a good chance of becoming obsolete because the major portion of the cars in the show were fitted with frameless glasses, which is an impor-

tant advance in the door lighting of limousine and landaulette bodies.

The heavy plate glass with bevelled edges is fitted to a finely narrowed brass frame, which is lip grooved to take the edge of the glass. The groove is lined with a special cloth material and cemented in with a special liquid; the glass is thus held firmly in the groove and rattling prevented. The edge of the glass frame is also padded with non-rattling material, which allows a sweet and smooth working of the glass within the door pillars. By an ingenious mechanism the glass could be raised or lowered within the door by a spring arrangement fixed to the garnish rail of the door. This improvement was a characteristic in many of the cars exhibited, but each was mostly of distinct mechanism.

## Nothing New in Trimming

In the matter of upholstery there was a uniformity of lines almost closely following those that have appeared in the trimming articles which were published in the columns of *The Hub* from time to time a year or two ago, yet each car was luxuriously finished in the individual taste of the builders themselves, the prevailing color being drab and fawn, the cloth being richly relieved with light silvered laces to match. Spring seat cushions were universal in the heavier closed cars. Swivel chair seats were more general than hinged side seats, the former being vastly more comfortable.

## Body Hanging the Problem

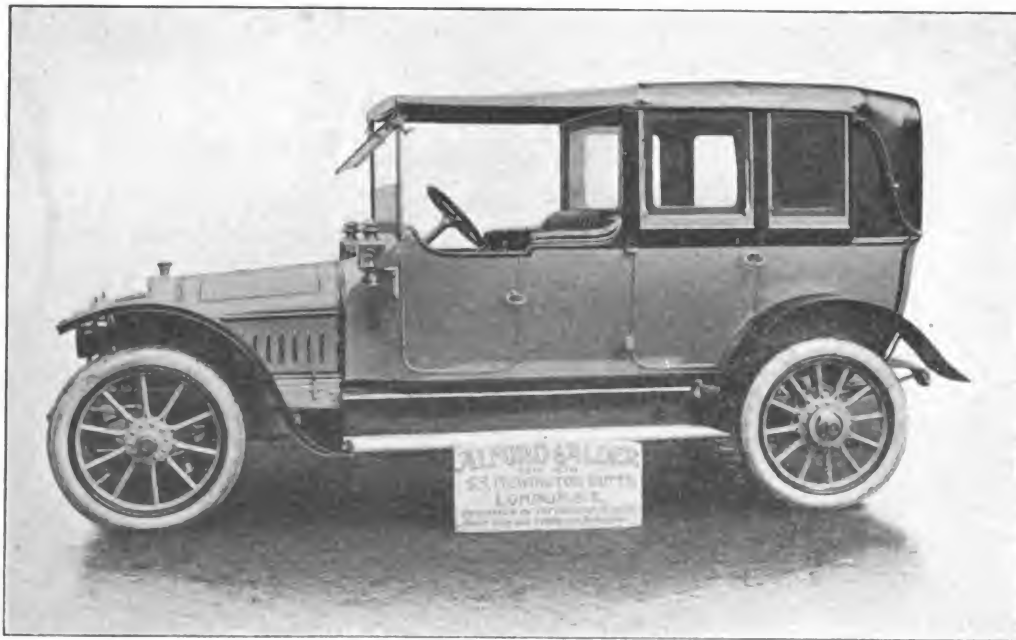
The suspension of cars is still a knotty problem with those who build chasses regardless of the coach makers' experience in the traction of road vehicles. The various expedients in hanging were coach makers' devices in a new clothing. The back half top elliptics were universally C'd after the manner of old time coach making and still employed in the suspension of carriages by one of the most eminent of English coach building firms, viz., Holmes & Co., of Derby and London. This design of top half elliptic absorbs or, as it were, cushions shock by preventing rebound in traveling over unequal road surfaces. Some of the chasses were hung on coiled coupling absorbers, an improvement on the rigid coupling. Another important element in the hanging of chassis was the employment of a cantilever spring to prevent the springing of chassis. This is a most necessary method in the suspension, as the spring resists the downward yield of the chassis at its center, or as near the center as is possibly consistent with the length of the spring as a resistant lever. The method also assists the body to keep its framing position without being strained by the stresses thrown upon the chassis by the speed.

The cantilever spring was employed in the suspension of barouches and landaus by individual coach makers forty years ago, while Mr. Ridges, a carriage builder of Wolverhampton, took out a patent for the same purpose over twenty years ago, so that truly "there is nothing new under the sun." The cantilever principle is nevertheless a true and correct method of suspension.

## Painting Rich, Finish Superb

The painting of the cars throughout the show was very rich, while the finish was simply superb.

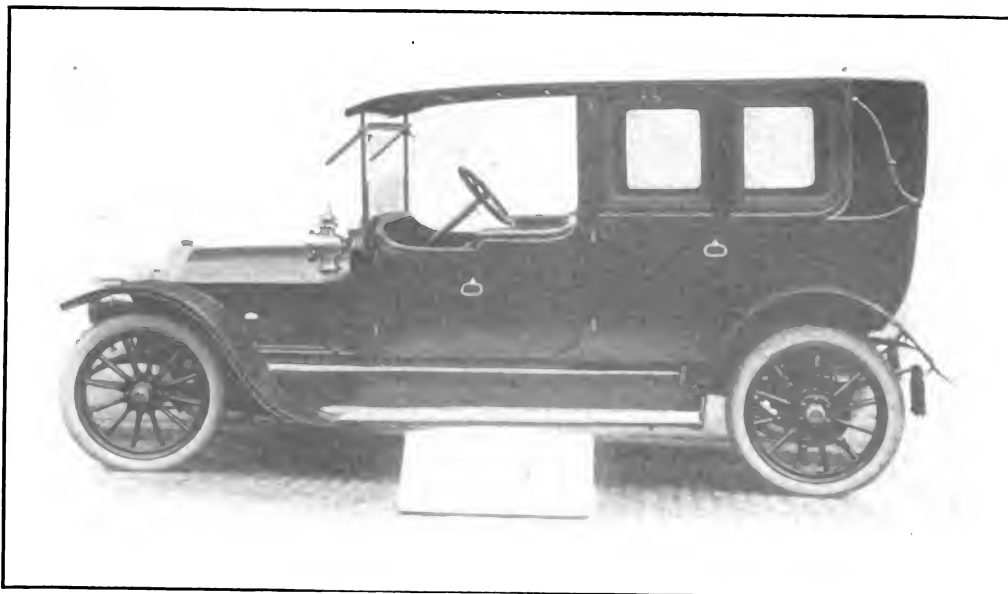
The accessory exhibit was very extensive and dealt with



No. 1

**THREE-QUARTER CABRIOLET****ALFORD & ALDER**

53 Newington Butts, London, S. E.

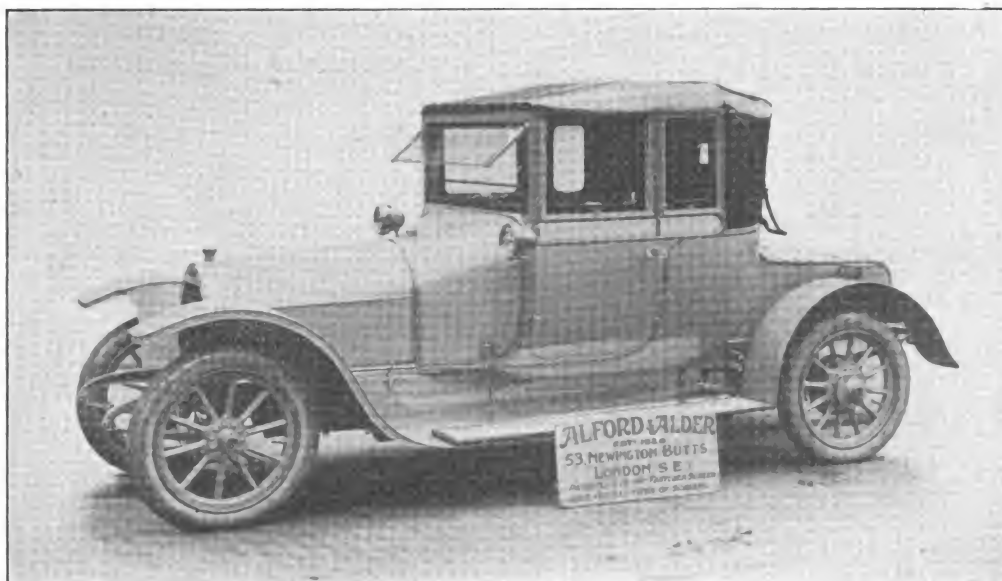


No. 2

**LIMOUSINE LANDAULETTE****ALFORD & ALDER**

53 Newington Butts, London, S. E.



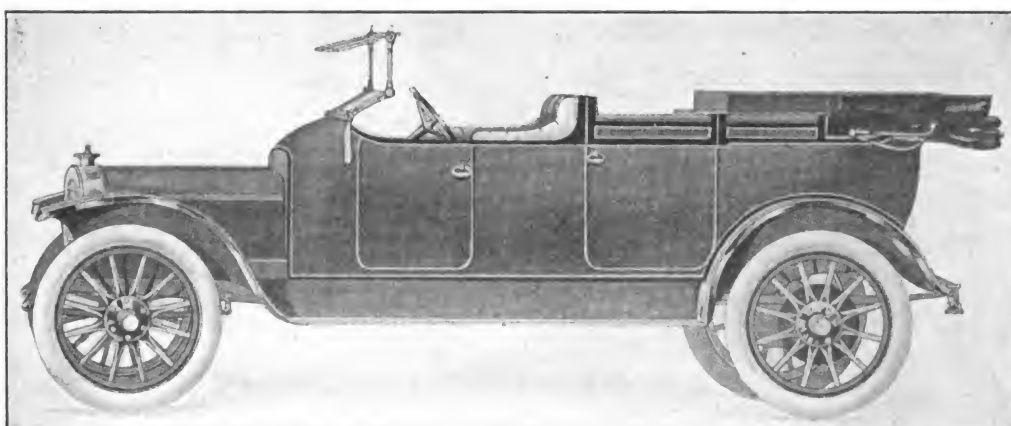


No. 3

**COUPE CABRIOLET**

**ALFORD & ALDER**

53 Newington Butts, London, S. E.

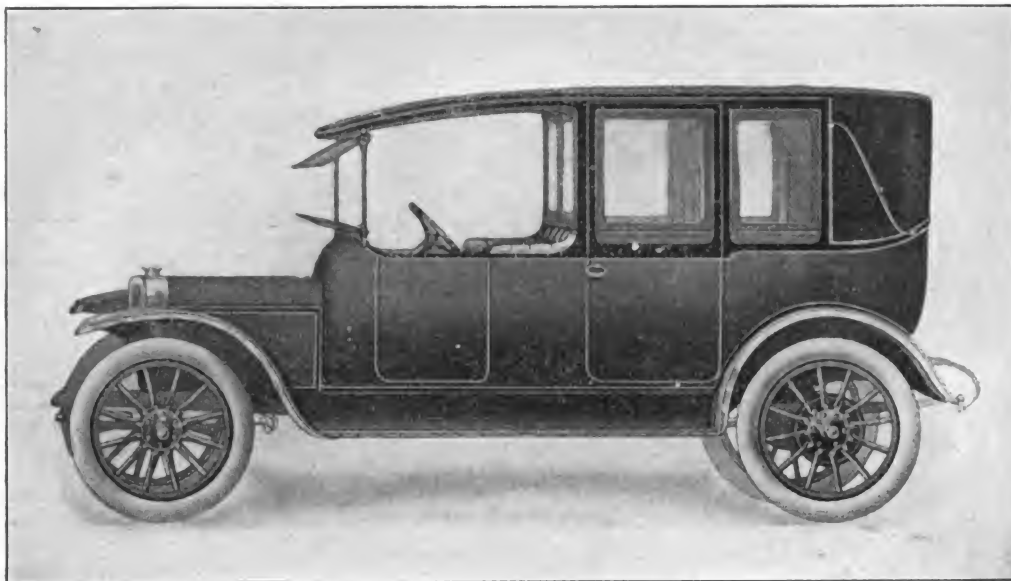


No. 4

**LIMOUSINE CABRIOLET**

**LAURIE & MARNER**

119 Mount St., Grosvenor Square, London, W.



No. 5

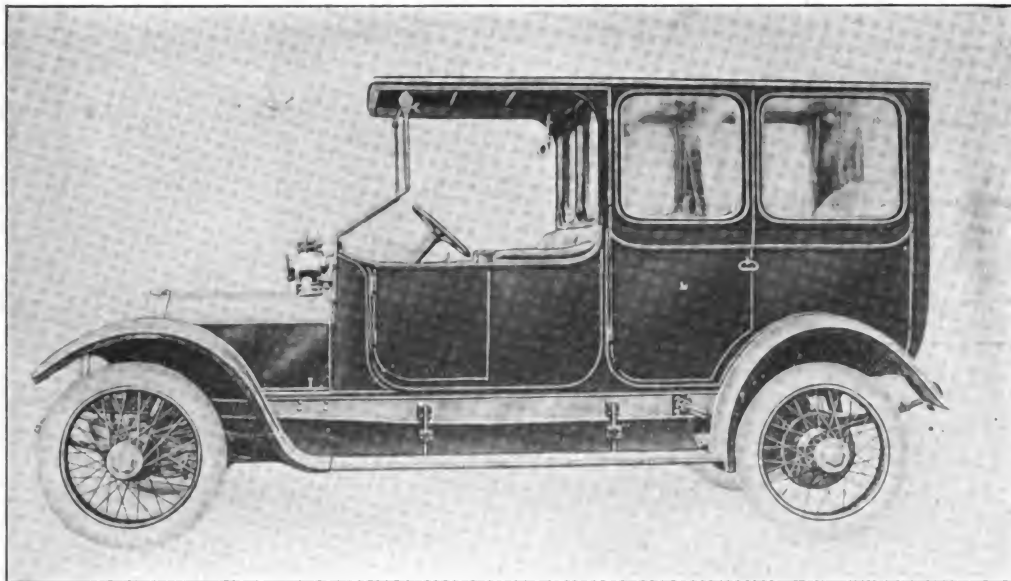
**LANDAULETTE  
LAURIE & MARNER**

119 Mount St., Grosvenor Square, London, W.



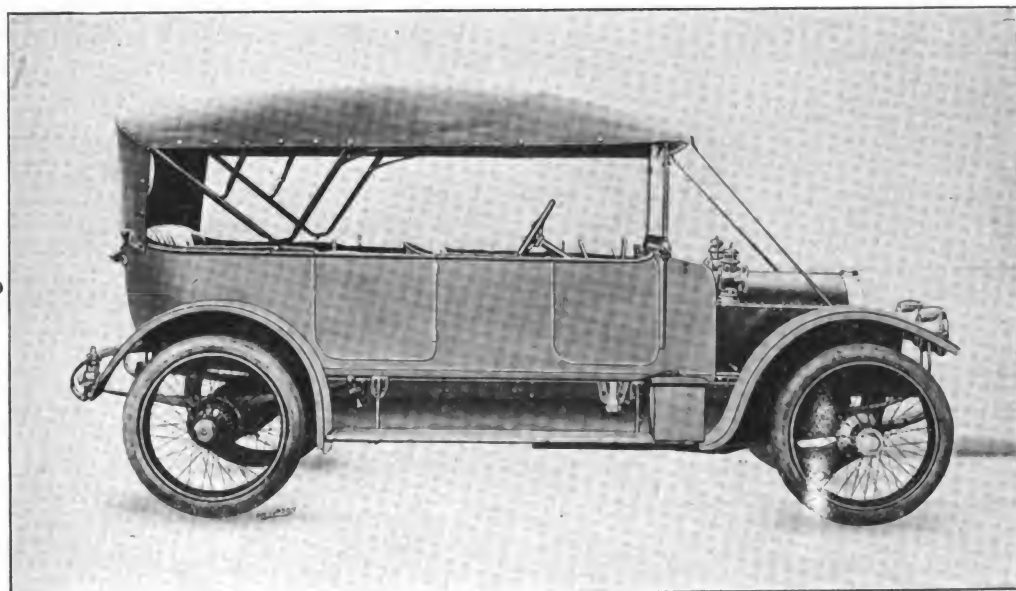
No. 6

**CALLERTON LANDAULETTE  
SIR WILLIAM ANGUS, SANDERSON & CO., LTD.,  
Newcastle-on-Tyne**



No. 7

**DEIGHTON LIMOUSINE**  
**SIR WILLIAM ANGUS, SANDERSON & CO., LTD.,**  
**Newcastle-on-Tyne**

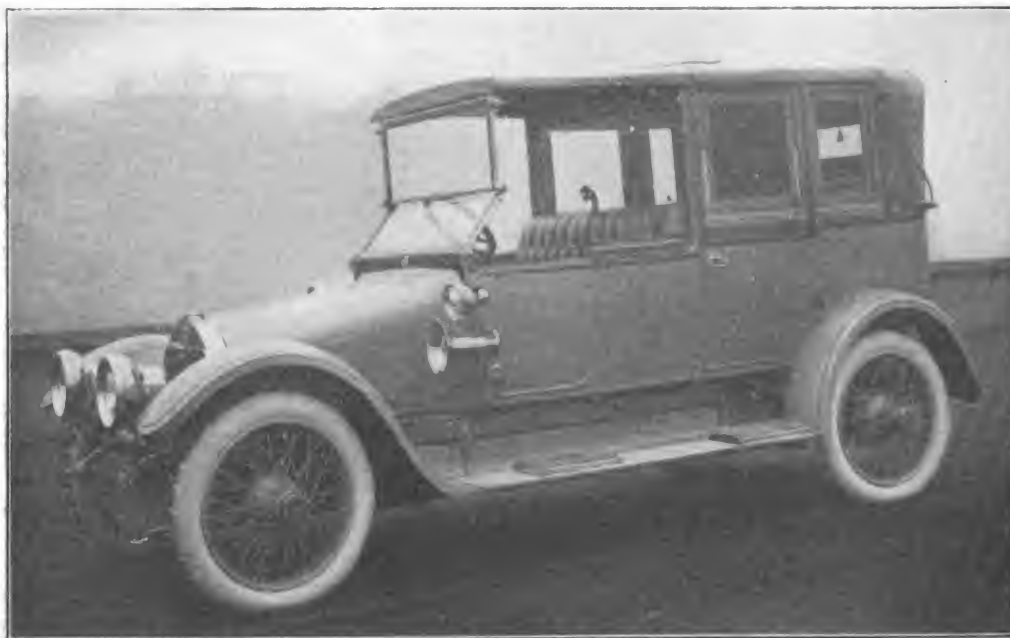


No. 8

**BROUDLING PHAETON**  
**SIR WILLIAM ANGUS, SANDERSON & CO., LTD.,**  
**Newcastle-on-Tyne**



No. 9

**ELSWICK CABRIOLET****SIR WILLIAM ANGUS, SANDERSON & CO., LTD.,****Newcastle-on-Tyne**

No. 10

**DILSTON CABRIOLET****SIR WILLIAM ANGUS, SANDERSON & CO., LTD.,****Newcastle-on-Tyne**

all engineering improvements in standardized work in every make of car.

The foreign exhibits were confined to a French firm, Gregoire, who exhibited very special cars. The agencies of Studebaker, Flanders and Ford, American firms, also exhibited specimens of the cars supplied by them. The cars did not offer any special feature from their standard output beyond the low price at which they are sold to a wide demand in the British market which the free trade law allows, without the imposition of a tariff on importation vastly to the competitive injury of the British motor builder.

Alford & Alder, of 53 Newington Butts, London, who were established in 1820, exhibited a select group of three cars all of which were splendid specimens of British motor coach building.

No. 1 (14-18 h.p. Peugeot), a three-quarter cabriolet body, finely balanced, with massive and pleasing lines. The belt line from the front pillar to the joint pillar of the head on the hind body was panel moldened, and the elbow of the back head quarter cut in to harmonize with the front seat elbow and door line—these points of contrast blending finely with the body's massiveness.

The body combines all the advantages of the limousine landaulette with the additional advantage of being suitable for owner's driving.

The hood closes down by a very simple automatic action, and can be operated by one man, leaving a completely open car.

When down, the hood occupies very little space at the back. It lies quite flat and only overhangs about ten inches. The painting was of a rich shade of azure blue with black moldings, with real gold fine lines, and upholstered with fawn cord cloth inside, and blue leather to front seat.

No. 2 (16-24 h.p. Unic). A limousine landaulette body with cabriolet front quarter. This body is constructed to carry four persons inside comfortably, having oval corners at the back and a square cornered hood to give more shoulder room for the occupants of the rear seat.

The front pillars have oval mouldings, the canopy is curved downward and the whole body kept low to give a smart, rakish appearance. Extra large windows are fitted to the top back quarters with round back corners.

The car was painted a rich shade of Damson lake, and upholstered in grey cord cloth. The front seat was finished in leather to match the painting.

No. 3 (17-25 h.p. Peugeot) coupe cabriolet. The body is designed for owner's driving. The upholstery inside is of the most luxurious description. The body is kept low, the sides being built below the level of the chassis frame.

Both levers on driver's seat are enclosed, and an extra folding seat is fitted into the rear side door.

The back box has a folding seat for two persons; the seat is concealed when not in use; the rumble also provides a tool box within itself.

The hood is constructed to fold down completely in a very compact space, thus providing an entirely open car. It will be noticed that the scuttle shield flows into the line of the bonnet, giving a very handsome effect, the whole being a very smart exhibit in this type of car.

The car was painted a delicate shade of French grey, with grey mouldings and white fine lines, relieved with white cane work to waist panels. The hood was of black leather and the inside trimmings of grey cord cloth, with lace and fittings to match.

Laurie & Marnier, of 119 Mount street, Grosvenor Square, London, W., exhibited two very smart heavy cars.

This old established London firm was famous for the rich and finely designed barouches they built when this singularly handsome carriage was in the height of fashion as a park carriage over half a century ago.

It is therefore to be expected that the talent associated with such an eminent firm should readily show itself in the

production of the modern motor carriage. They exhibited two fine specimens of their heavy motor carriages.

No. 4 shows a heavy limousine cabriolet built to carry seven. It was fitted with a new pattern head which folds down flat and does not overhang. It was a fine type of traveling or family car, and richly painted and upholstered. The painting was lake and red; the upholstery drab Bedford cord cloth.

No. 5 shows a landaulette with cut up elbow line on the hind quarter and is designed to give more protection to the front seat in its sloping roof.

Painting blue, trimming grey embossed cloth quite plain, no buttons, and fitted with two extra arm chair seats. Both of these cars were fitted with new pattern wind screens divided to open either way, top or bottom glass.

Sir William Angus, Sanderson & Co., Ltd., had a fine exhibit of five cars all possessing added improvements to previous efforts. This eminent firm caters to a public demanding a heavy and luxurious vehicle which the whole of its designs will clearly show.

No. 6 shows a Callerton landaulette on 40-50 h.p. Rolls-Royce chassis. The body is designed with a free use of cabriolet lines, and was a fine vehicle of its type. It was flush sided, now a universal method in motor body construction.

It had comfortable seating room for three persons on the hind seat and two extra occasional seats inside. Frameless windows were fitted to it throughout; these were actuated by balancing springs.

The painting was of light green, picked out black and fine lined white.

The trimming throughout was of light grey figured fancy cloth, made up with richly figured silk laces, the internal fittings being entirely of real mother of pearl.

It was also very luxuriously fitted with lady's companion, cigar trays, flower vases, and equipped with a Rotax Leitner lighting set.

No. 7 showed a "Deighton" limousine of special design, the body in this case relying entirely upon the arrangement of the moulding for relief. The body provides for three on the back seat, while there are also two drop-down seats. This car was also fitted throughout with frameless windows worked by balancing springs.

The painting was of a blue ground, with a light blue on the waist panel for relief.

It was smartly upholstered with grey figured cloth, edged with richly figured laces.

The internal fittings were of real tortoise shell.

This car was to the special order of Sir W. G. Armstrong, Whitworth & Co.

No. 8 showed a cleanly cut design of body which the makers name the "Broudlings Phaeton." It was flush sided and it is claimed that the design and construction of this car is in many ways quite unique, the color scheme being in a particular shade of grey, with a dark grey trimming, the blending being effectively rich. The hood was "one man" and fitted with single folding wind screen. The body was fitted to a 15-20 h.p. Armstrong-Whitworth chassis.

No. 9 showed an "Elswick Cabriolet" with plain body, flush sided. The hood is made to open out and lie entirely flat. The painting was of grey and black, and luxuriously trimmed inside with grey cloth, and borderings to match, and fitted with the usual internal extras.

No. 10 is a "Dilston Cabriolet" of plain body and of sombre and original lines. It was painted in a peculiar shade of grey, the mouldings being painted in a contrasting shade of grey. The hood was made to fold and lie absolutely flat when opened out, thus giving all the advantages of a touring car. The upholstery was of French grey cloth with beautiful silk laces to match.

Horses in the world number about one hundred million, of which nearly one-fourth are in the United States.



## FEATURES OF FOREIGN AUTOMOBILE TRADE

According to estimates which have been made, the motor omnibus in London has made a phenomenal advance, while the street car systems have declined, says Deputy Consul General Carl R. Loop, London.

During the 23 weeks ended on September 4, the passenger receipts on the tramway system operated by the London County Council showed a decline of some \$233,592, while those of the seven street car systems of London and Greater London (including the one operated by the London County Council) have shown a decline during the past six months of some \$311,456.

In contrast to these figures the omnibus companies, particularly the London General and the National Steam Car, have shown remarkable increases. In the case of the London General Omnibus Co. it is estimated that for the eleven months ending September 30 the increase will amount to some \$2,501,381, while the National Steam Car Co. in 44 weeks has more than double its receipts, which are \$214,126 above the corresponding period of last year.

In North London, where the full competitive power of the motor omnibus is felt, the receipts of the Metropolitan Electric Co., which leases its lines from the Middlesex County Council, are declining in spite of increased facilities offered by the street car system, the return for the week ending September 6 showing a drop of some \$5,061. Until the middle of September it was the only street car system in London or Greater London which showed an increase on the receipts for the current year.

In spite of this showing, however, it does not appear that the number of passengers has materially declined on the street car systems.

Consul William H. Hunt says of France that it leads the world in the exportation of automobiles. For the first six months of 1912 the total French exports of motor cars amounted to \$19,564,330, an increase of 25 per cent. as compared with the exports for the same period of 1911.

The importation of automobiles into France for the first six months of the present year amounted to an estimated value of \$1,275,093, a slight increase of \$4,246 over the same period of the previous year. The importation of American cars showed an increase, while imports from Russia, England, Germany, and Belgium are on the decline.

The progress and development of the manufacture of automobiles has placed it among the nation's most important industries. The genius of its pioneers, Levassor, Serpollet, and Bouton, has built up vast enterprises and brought about a complete revolution in the means of locomotion on roads.

At the beginning of the industry the types of cars which are considered today the best were already in existence and on the road to success, and their makers constructed large factories, the output of which was classed among the finest examples of French metallurgy.

As is frequently the case, the success of these and other first class establishments caused a large number of smaller firms to spring up with neither the capital nor the necessary equipment. This caused a crisis in the industry by flooding the market with chassis of an inferior quality. These small concerns have practically all disappeared, and the present prosperous condition of the industry is fully satisfactory to stockholders and capitalists seeking safe investments.

The appended statement shows some of the principal French motor car manufacturers, with the amount of capital invested in each establishment: De Dion-Bouton, \$3,000,000; Dietrich, \$3,000,000; Delaunay-Belleville, \$1,500,000; Peugeot, \$1,250,000; Panhard-Levassor, \$1,000,000; Th. Schneider, \$1,000,000; La Buire, \$1,000,000; Brasier, \$800,000; Rochet-Schneider, \$500,000; Chenard-Walker, \$450,000; Pilain, \$400,000; Gregoire, \$380,000; Hurtu, \$350,000; Cottureau, \$300,000; Delaugere-Clayette, \$300,000; Motobloc, \$300,000; Vinot-Deguignand, \$160,000.

The automobile industry has also given rise to a large number of companies which operate public and private taxicab and industrial truck services, especially the former.

Consul L. J. Keena, Florence, says of Italy that in July, 1912, 162 public service automobile lines were in operation and 91 lines were under consideration or concessions, which, when allowed, would give an additional total length of approximately 2,500 miles.

The cost to the government in subsidies for this public service has naturally increased with the growth of these lines. During the fiscal year 1908-9, the expense borne by the government was \$37,141; in 1909-10, \$185,575; in 1910-11, \$317,697; in 1911-12, \$549,762; and the estimated cost to the government for the current year 1912-13 is \$1,085,828.

Consul General Ernest L. Harris, Stockholm, speaking for Sweden, says: The Aktiebolaget Scania-Vabis of this city decided at a recent meeting of the stockholders to enlarge its plant in order to be able to increase its automobile output next year. The company intends to buy a former wagon factory in one of the suburban towns of Stockholm with a view to installing up-to-date machinery. The output will be about 300 automobiles yearly.

The use of the automobile is now becoming general in Sweden. The cab system of the city of Stockholm is now practically made up of motor cars. A great many American motor cars are in use. The best way to market automobiles in Sweden is to have a general agent for the whole country, and in order to find such a qualified and energetic man a personal visit to this country is recommended.

Consul Wilbur T. Gracey, Progreso, Mexico, says: Merida, the capital of Yucatan, and the only city in the state where wheeled vehicles are used to any large extent, is very well supplied with excellent roads. A few years ago a considerable sum of money was set aside for local improvements, and the roads of the city, which had before been exceedingly bad, were all paved with excellent asphalt, locally manufactured from the high quality of limestone which is found in this country.

In the course of four years the following amount of street paving was done: 140,490 square meters (sq. m. = 1.196 sq. yds.) of asphalt, 139,400 square meters of single concrete, 69,749 square meters of double concrete, and 59,564 square meters of vitrified brick. These streets are approximately 30 feet wide, and are ideal for automobile driving and for the use of rubber tired vehicles.

Prior to the paving of the streets a carriage peculiar to Yucatan was in use, and many hundreds of these are still seen. They are not unlike an open cab, the driver sitting on a high seat forward with his feet on the dashboard. Four people can occupy one of these carriages, but are somewhat crowded. Four strong posts support a flat roof, and in the old days were convenient to hold on to when passing over the rough ruts of the streets. The utility of these vehicles has largely vanished, however, since the improvement of the paving, and a type of French victoria is slowly taking their place.

There would appear to be an excellent opportunity to introduce American-made victorias here, especially if they could be placed on the market at prices to compete with those now here. A few American carriages are seen, but by far the largest number of vehicles on the streets are of the open-cab type described, and are manufactured in Yucatan. It would probably well repay some energetic American manufacturer to investigate the possibility of manufacturing this type of vehicle for export to this city.

In the country districts about Merida, and in fact throughout Yucatan and the nearby states of Campeche and Quintana Roo, another vehicle typical of the country is in use, known as a volan. This consists of a body supported on two wheels

with strap springs. It seems probable that a type of buckboard such as is used on the rough roads of the United States might find a sale for this country travel.

About 150 automobiles have been imported and are in constant use in Merida. The cheapest class of cars seem to be the most popular, and are almost all American, though a few French cars of the better class have been privately imported. There is a growing demand for automobiles, and if the present price of henequen advances, which seems probable with a large crop of wheat in the United States, a shortage of manila hemp, and a consequent larger demand for henequen for use as binder twine, there will be an increased demand for automobiles and all other products on this market. The trade of Yucatan, especially as regards luxuries, is largely dependent upon the henequen crop and its price, as this is the great export of this country. With high prices, the local population increases its purchases of luxuries, and with a fall in price cuts its expenditures down to necessities.

American manufacturers contemplating exporting to this district should therefore closely watch the prices of henequen, as with a higher price, and consequent larger profit, there will be an increase in purchasing power that will be noticeable within the course of a few weeks.

As the duty on automobiles in Mexico is assessed on weight the lightest vehicles are most readily sold, and the weight of a carriage or automobile is the most important point with the local importer.

One local American firm imports automobiles and might be interested in carriages. The other American automobiles sold here are imported by Mexican firms. (A list of dealers in automobiles and automobile supplies and importers of carriages is on file in the Bureau of Foreign and Domestic Commerce, and can be obtained on application.)

All business here is done directly with Merida, Progreso being merely the port of entry and custom house for Merida. Merida has a population of 40,000 and is said to be the wealthiest city of its size in Mexico. There are many fine buildings, and with higher prices for henequen an extension of the roads to Progreso, and possibly other places, may be looked for.

Richard E. Pennoyer, Montevideo, Uruguay, reports it was intended ultimately to increase the motor-bus service in Montevideo. The Executive's plans in regard to this extension have now been made public.

Since the inauguration of the motor-bus services a French De Dion-Bouton machine has been received, so that a total of five motor buses are now in service—two French, two English, and one German.

The French machines have proved the most satisfactory, so that an immediate additional order for buses has been placed with the firm of Schneider & Co., at a price of \$6,848 each.

It is also announced that the Chambers are soon to be asked for an appropriation of \$361,900 to cover the purchase of another lot of 30 machines. Two garages and a repair shop are also to be erected, and a system of bonuses in the form of commissions on total receipts is planned for the entire staff connected with the service.

The English and German vehicles have not proved a thorough success, due largely to their lighter construction and to the very poor state of the streets over which they are operated.

Aside from the state banking and insurance experiments, the new bus service represents the most important line of government competition with private companies yet attempted, as the buses parallel the tram lines of the city and the fares charged are less than those obtaining on the cars of the English tramway company. (American firms interested in selling cars for this service should address El Ministro del Obras Publicas, Montevideo, Uruguay.)

In Australia, Consul General John P. Bray, Sydney, says the automobile and vehicle industry generally is being vigorously carried on in New South Wales at the present time. Cars are being registered at the rate of almost 50 per week, and the latest returns of the traffic department show that there

are 5,225 registrations of automobiles and 3,600 of motorcycles. The chauffeurs registered number 5,684. A fair average value for each car running today in New South Wales would be about \$1,950, for, while a few are valued at \$7,300, and many at prices ranging from \$2,400 to \$4,800, there are a great many cheap runabouts, costing all the way from \$725 up to \$1,600. Taking the value at \$1,950 each there are cars valued at \$10,157,000 now running in the state.

There are 200 motor trucks registered, and there would be more than double this number if English manufacturers could fill the orders of local agents.

Commenting on the situation the Daily Telegraph recently remarked:

"There is such a big demand in England that the Australian agents can not obtain supplies of commercial vehicles. Of the touring cars now being purchased here, 50 per cent. are of American manufacture. The Americans have a fine market here, and the same story has to be told of all the other states of the Commonwealth."

### THE LUGGAGE ON THE CAR

Does the chassis manufacturer design for the carriage of luggage? Does he not rather design for other objects when introducing a touring model? It does not follow, says an English writer, because a few persons prefer to sit on the small of their backs and look down their noses through the spokes of the steering wheel that the great majority of tourists do so. It is very desirable that the weight should be kept low and between the wheels, but it is not necessary that the passenger should sit on the floor of the car to secure this object.

If the wheel tracks of large-powered touring cars were increased to not less than 50 inches, the wheels increased in height, the engine and gearbox being kept as low as possible to provide a sufficient clearance for rough roads, with the space between the frames increased, it would be possible to provide two long spaces on either side of the propeller shaft for trunks sufficiently large to carry the necessary luggage of two occupants, and a sufficiently large gasoline tank under the front seat, where the variation between the full and the empty weight would affect the running of the car the least. If the strong-gusseted cross member at the extreme rear of the car was placed clear of the axle and differential casing, and the ends of the side member carried further outwards, there would be sufficient space provided for a large trunk under the rear seat of the car. Space would be found on either side, by modifications in the fittings, for placing fair-sized boxes for the accommodation of luggage, while boxes under the steps at the rear end would carry the necessary repair outfit.

What is to become of the spare wheel? Has the problem of its disposal ever been fairly and squarely faced? Is it not too often left out of consideration in the general design and just added on after wherever it can be placed?

Evidently, from the regularity with which it is specified by the makers, it is considered to be necessary, and must be provided. Consequently it has to be carried on the car at all times. It is just as much in the way as an umbrella on a fine day. It is neither so portable nor conveniently handled; but, if needed, as indispensable. Of course, if the chassis manufacturer cannot possibly modify his design and carry the gasoline tank in a position other than at the rear, the tire must go elsewhere; but could not the rear cross member of the frame be carried downwards so that the tire could be placed in a nicely shaped and rounded over receptacle, the center of which could be a box for the carriage of spare tubes, tire repair outfit, etc., or made accessible from the interior as a luncheon case? Certainly the lady passengers might find this large, circular space of some utility during a tour.

To accomplish all these things, space and the economy of space already provided is required. The waste of useful space between the front of the bonnet and the front edge of the

driving seat is often such as to call for wonderment at the expansive ideas of the chassis designer. If ever there was a case in design where an inch saved in front was two inches gained at the rear, it is in the economy of space at this point. A six-cylinder engine cannot be packed into the space of a four-cylinder one, but it should not be necessary to treat the design as though the whole of the wheel base were available for the bonnet, and to treat the purpose for which the car is presumably designed, i. e., the carriage of passengers, as merely an afterthought.

By making provision for the carriage of luggage under the floor level and within the chassis frame the weight will be kept low. By the rigid economizing of space in front the variable load can be kept within the wheel base, the comfort of the passengers considered, and the economical running of the car assisted, if not assured. The present-day car is provided with a wheel base which is as long as is convenient, having due regard to economy in running and upkeep, for the long wheel base necessitates a long chassis, with its possibilities and potentialities for whipping and succumbing to torsional stresses. There is, therefore, the greater necessity for the economical disposal of the space above the wheel base, while giving ample accommodation for all that it is desired to carry on the frame.

### THE ADVANTAGES OF PIECE-WORK

In these times of competition, when labor-saving devices are being placed upon the market, a concern which cannot rapidly and economically manufacture its product will soon have to go out of business.

Now there are many things to be said on the advantages of piece-work over day labor. (1) Because by piece-work a man's competence is accurately known from the beginning; and only those men are retained who will show marked ability. (2) Because impelled by the competitive spirit originated through piece-work the men in their race for quantity as well as quality not only apply all the skill they are capable of, but improve their output and learn better and more efficient methods of handling their tools, that they may work them up to capacity.

In giving out piece-work one thing should be followed as far as practicable: Always to give the same kind of work to the same man; as men constantly doing the same kind of work will increase their output and turn out work that will be perfect and bear inspection. This certainly is not a small point in the manufacturer's favor. But perhaps some here have heard this argument pleaded in favor of the premium plan; for it is impossible for you to uphold the day labor any longer. There is this against adopting the premium plan in the first place. In order to inaugurate such a system, two factors and much consistent work upon the part of the employer are necessitated. Besides, this system generally fails when first put into effect in the shop. The employer in introducing the premium plan must increase his inspection force and has also to originate an entirely new office department. This department has not only to fix the amount of time in which the average man should finish his piece, but it has also to determine the rate by which the man is to be paid for the time saved in completing his work. The inspection force will also have to be increased, as through the premium plan it is very easy for a man to increase his premium by making the time saved appear greater than it should. This factor, of course, increases the manufacturer's expense. But when the premium scheme is placed in the shop the real trouble begins. Workmen today are suspicious of their employer and fear that every change is going to benefit the employer alone at a loss to themselves. In inaugurating this scheme, before the department in charge of the premiums has obtained a correct knowledge as to the ratio upon which to base their payments on time saved, many errors will occur.

Some kind of system, no matter how poor, is better than

none. A premium bonus system is better than straight day work, especially for the employee. That the employer at times gets a benefit therefrom is natural; but especially when the premium system is not set properly, as is often the case when times are good and the work is being rushed, the man with any or little ambition will try to do more than his day's rate to make a bonus. In this case the premium works satisfactorily as far as he is concerned. But, on the other hand, if work is scarce, the full time or extra time may be taken and still the man makes his day's rate.

In a shop where every square foot of space is worth just so much money it is important that you get the best possible output, thus saving floor space and increasing your output at the same time. This is a very great saving where real estate is high, and in heating, lighting, etc. And this should be taken into consideration, says T. F. Keene, in *American Blacksmith*.

Cutting piece-work prices shows great ignorance and inexperience on the part of a piece-rate man if he is thinking of cutting prices as soon as a man makes a little more than usual. When some men make considerably more, they are taking an interest in their work and they are hustling and working more efficiently. Those men, if their work is done properly, deserve all the money they can make. The chances are if another man was put at this work he would not be able to make so much money.

If everything is given the proper attention there is no reason why the straight piece-work system should not be looked upon with favor by the employee who through it will make more money. As for the employer it saves him a vast amount of unnecessary labor.

### OUR FOREIGN COMMERCE IN 1912 TO CROSS THE FOUR BILLION DOLLAR LINE

The foreign trade of the United States will cross the four billion dollar line in the year which ends with this month. Its highest former record was 3,626 million dollars in 1911, and it only crossed the three billion dollar line for the first time in 1906 and the two billion line in 1899. Imports in the ten months of the current year for which figures are now available amounted to 1,511 million dollars and exports to 1,871 million, making it apparent that the imports of the full year will approximate 1,800 million and the exports 2,300 million, or approximately 4,100 million dollars, against 3,626 million in 1911.

Imports have practically doubled in value since 1901 and exports have practically doubled since 1904. The exports of domestic products, which had never touched the two billion line until 1911, will in 1912 approximate 2¼ billion dollars, while the exports of foreign merchandise during the year will probably fall slightly below the high record of 37¼ million dollars in 1910.

One of the striking features of the rapidly enlarging import trade is the increase in importations of non-dutiable merchandise. Returns thus far received indicate that the quantity of non-dutiable merchandise entering from foreign countries during the full year will be nearly or quite one billion dollars in value and will certainly pass the one billion dollar line if the free merchandise coming from our own islands is added to that imported from foreign countries.

### KRIT ESTABLISHES OKLAHOMA BRANCH

The Krit Motor Car Company, of Detroit, builders of two-passenger roadsters, five-passenger touring cars and covered delivery wagons, has opened up a factory branch in Oklahoma City. They have appointed R. B. Fremont district manager for Oklahoma, Texas and Arkansas, with headquarters at Oklahoma City. Mr. Fremont was formerly state manager for the U. S. Motor Company, and is well known throughout the state.

## NEWARK, N. J., TRADE NOTES

Many changes have been made in the trade in Newark, N. J., during the past five years. Some of the old carriage dealers and manufacturers have gone out of business or are giving attention to the automobile line. There are not many strictly carriage dealing concerns. Most all up-to-date firms have protected themselves by getting in line and moving onward by taking up automobiles, repair work and body making. The accessory trade is very heavy, but evidently the carriage firms prefer to leave that line entirely to the automobile trade.

Another change is that Halsey street, which used to have several carriage firms in it, has now been given up almost entirely to the automobile line. The future center of the carriage industry is Central avenue, where several of the large firms have located. It also will later on supersede Halsey street as to the automobile trade. Central avenue is wider, a good business street, and is the best street connecting with the Oranges, Montclair, etc.

It is reported that quite a number of people are giving up the automobile as it is too expensive, and the repairs come in too heavy. It is said that several large firms using trucks will go back to horses.

The wagon trade has been fairly good during the present year. The orders for new heavy wagons, trucks and light delivery wagons were larger than for the year before.

The W. T. Crane Carriage Hardware Co., through their secretary, A. S. Van Sant, has the following to say as to carriage hardware: "The steel mills can hardly make shipments on time; and almost impossible to supply the demand. Wagon materials are running very good. The automobile has had some effect on the carriage and wagon supply lines, but the dealers in carriages and wagons have concluded to keep up with the times by adding auto lines. There will for some time to come be a demand for carriages and wagons."

H. A. Rummell & Co. is a new firm in Maiden Lane, to build carriages and wagons. Mr. Rummell was with J. Ludwig. They report the trade quiet now, but expect by the first of the year to take another large building in addition to the present one and expect to go extensively into the building of automobile bodies for commercial uses. Have put on several hands, which will be increased, and have now quite a few orders for future delivery.

J. Ludwig, Inc., of Canfield street, during the past few weeks has built seven new delivery wagons and several good sized trucks. Has also a lot of motor body work. Is using considerable ash now instead of oak, as it seems tougher for the body work.

Joseph F. Curry, who was for five years with W. J. Harper making carriage and automobile parts, later bought him out. Then he took in a partner, then he continued the business alone on Mulberry street, and later moved to 475 Washington street. Since that he has given up the plant there and has started at 420 Plane street, jobbing and handling these same lines. He now calls his firm the C. & M. Auto Parts Co., with a New York office at Broadway and Sixty-sixth street.

The Orange (N.J.) Carriage Works started in business a short time ago.

C. M. Post, of Halsey street, says his trade has shifted considerably to the automobile repair line, but also does quite a little carriage business. The repair work has been very good. This firm has been in business for 70 years. It used to be Golden & Post, when Halsey street was then known as Harrison street, later as Church street and then was changed again to the present name.

Colyers have moved to a new building built entirely to suit their purposes at 506 Central avenue. This is a four story, 100 x 100 feet, and has been equipped with the most improved machinery; are doing now a large amount of repair work,

both on carriages and automobiles, and will continue in the carriage business as for years past. Will also build complete automobiles, but have not decided what name to call this make. By the first of the year they will be in full swing in the new line.

The Ellis Motor Car Co., Mr. Ellis, manager, has built a large building at 416 Central avenue and do a lot of automobile repair work, but are not in the carriage line.

The Linkrum Auto Co. now has space in the Colyer building in Central avenue, but will move to a garage and salesroom now building at Central avenue and First street. This company handles automobiles.

Mr. Atkinson, who conducted the Central Carriage & Wagon Co., at 441 Central avenue, selling vehicles, is out of business. Mr. Atkinson failed and lost everything.

Delaney & Son, making carriage and wagon springs, say business is quiet and are devoting more time to the automobile lines.

The E. A. Whitehouse Manufacturing Co., of Elm street, is very busy on automobile hardware. Has recently completed an addition to the plant of 110 feet deep, which will increase output 30 per cent. The demand for the carriage lines is not strong.

D. B. Dunham & Son have given up the carriage building line in Rahway, N. J., and have moved to Newark. Have built a building according to their own ideas at 449-455 Central avenue, five stories in height, giving them 50,000 square feet of floor space at a cost of \$65,000. The building is of brick and mill construction. They are building automobiles and have complete departments, all but the engine. Are turning out a fine grade of work, principally limousines. Also doing a lot of auto body work and repairs. They do not build carriages any more, but repair them. This firm will celebrate its semi-centennial anniversary in 1913. John J. Connolly, the superintendent, has been with this firm for twenty-five years.

Charles Smyth Co., of 240 Central avenue, are having a good demand for trimming leathers.

### ANNUAL MEETING OF MICHIGAN RETAILERS

#### W. L. Reid Elected President and Next Year's Convention Goes to Grand Rapids

With an attendance of 300, the annual convention of the Michigan Retail Implement and Vehicle Dealers' Association opened at Saginaw, Tuesday morning, November 19.

Mayor George W. Stewart gave the address of welcome, and the response was made by President W. L. Reid, of Jackson. In the afternoon President Reid gave his annual address, in which he said that the delegates should give attention to the four cardinal points of their business—buying, selling, collecting and paying.

The first entertainment feature of the convention was given in the Auditorium Tuesday evening. Practically every one of the members and visitors to the convention gathered to hear a magnificent concert.

The Wednesday morning session was given over largely to reports. Secretary F. M. Witbeck gave his report; Treasurer Otis Boylan reported the association in fine financial condition, and J. F. Folmer and Isaac Van Dyke reported on cost accounting and insurance. President Reid gave a report on the work of the national federation and its relation to the state association. The work of the Michigan Federation of Retail Merchants was reviewed by E. S. Roe, the president. His subject was, "Retailing and the Power of Affiliation."

One of the most interesting of the morning subjects was that given by E. W. McCullough, secretary of the National

Implement and Vehicle Dealers' Association. His subject was "Cost Education and the Value of Local Clubs." This is in line with recommendations of the manufacturers of the United States.

President E. S. Roe, Buchanan, of the Michigan Federation of Retail Merchants, outlined the new association's plans and said it was ready to co-operate with other organizations to secure legislation such as the liability law and one-cent letter postage, the latter being strongly favored.

The banquet Wednesday evening was attended by about 500, John A. Cimmerer acting as toast master. Supt. E. C. Wariner, of the Saginaw east side schools, declared that this country must forge ahead in its industrial and agricultural education, and that Germany's wonderful commercial advance is due to the system of education there.

E. A. Snow, of Saginaw, spoke on the new "Michigan Liability Law," and said that, while it is a good law, he did not believe the compensation was large enough. Addresses were also given by Rev. W. H. Gallagher, Caro, and E. M. Hopkins, Detroit.

At the Thursday session Grand Rapids secured the next convention, and President W. L. C. Reid was reelected. Other officers elected are: Vice-president, D. M. McAuliff, Albion; treasurer, C. A. Slayton, Tecumseh.

### REPORT OF C. B. N. A. EXECUTIVE MEETING

The executive committee of the Carriage Builders' National Association held its annual meeting at the Hotel Astor, New York, on November 22. The members present were: C. A. Lancaster, South Bend, Ind., chairman; C. C. Hull, Connersville, Ind., president of the C. B. N. A.; W. H. Roninger, St. Louis; Lewis Straus, Newark, N. J.; W. A. Sayers, Cincinnati; C. O. Wren, Norfolk, Va.; O. B. Bannister, Muncie, Ind.; Theodore Luth, Cincinnati; Carl P. Schlamp, Henderson, Ky.; J. D. Dort, Flint, Mich.; Daniel T. Wilson, New York, and Henry C. McLearn, Mt. Vernon, N. Y., secretary of the C. B. N. A.

C. A. Lancaster was unanimously reelected chairman for the next year. Report was made on the progress with the St. Joe Valley Traffic Association agreement to audit the freight bills of the members of the association. Several of the members have availed themselves of this arrangement, with profit to themselves, and it was the general opinion of the committee that others of the association would find this a good plan to use on these matters. Arrangements were made to bring this to the attention of the association, with the idea that they would join in and aid themselves in securing proper charges on shipments.

In consideration of their large contribution toward the support of the association's technical school, it was voted that the Automobile Manufacturers' Association be invited to name two of their members as honorary members of the board of trustees of that school with full powers.

Consideration was given to the growing habit of some of the exhibitors at the annual exhibition of having only an office in their spaces, which would result in having a hall full of offices instead of an exhibition of the productions of the exhibitors, and which would not be a very attractive exhibition, nor in accordance with the purposes for which the exhibition is held.

It was ordered that this matter be brought to the attention of the exhibitors and a request made to them to exhibit their goods, so the members and visitors will have something to look at and pay them for the expense of coming to see the exhibition, and not have to look at partly empty spaces, with a table and two chairs. The handy reference book was endorsed, and the publication ordered for next year, with such additions and changes as may be necessary.

H. B. Staver was elected a member of the committee, to fill the vacancy made by the election of C. C. Hull as president of the association.

The date for the convention next year was left to a sub-committee, so they could discover upon what dates the hall in St. Louis could be obtained, probably early in October.

The president reported having a conference with the exhibitors at Atlantic City, in which the exhibitors promised their co-operation in having the exhibition closed during the sessions in the meeting room on Tuesday and Wednesday of convention week. No long reports will be read at these sessions, but will be reported by the trade papers, so that all can read them. The time usually occupied by the reading of reports will be given over to the addresses by good speakers.

This ended the business of the meeting.

### DALLAS CLUB ELECTS OFFICERS

The Dallas Implement and Vehicle Club elected officers, November 12, as follows: Charles W. Padgett, president; O. P. Robb, first vice-president; S. B. Robertson, second vice-president; J. W. Atwood, third vice-president; A. B. Taber, secretary and treasurer, and E. Rosenbaum to fill the vacancy on the board of directors.

The annual meeting of the club, which was held over a banquet in the ladies' ordinary of the Oriental Hotel, was attended by 27 of the total membership of 38. The treasurer's report showed that the total receipts of the year were \$2,095.30, the expenditures \$1,769.09, and that the balance on hand was \$311.98.

The secretary read a letter from Henry Marti, secretary of the Texas Hardware and Implement Dealers' Association, soliciting the co-operation of the club in securing the passage by the next legislature of a bill requiring peddlers to pay a license. It was the sense of the club that the proposed legislation is very desirable, and the letter was accordingly referred to the legislative committee with instructions to report at the next meeting.

### MADE HANDSOME PROFIT

At the meeting of the board of directors of the National Implement and Vehicle show held in the Association of Commerce rooms, Peoria, Ill., November 11, Chairman A. J. Tapping, of the finance committee, read his annual report, which showed that the second implement fair netted a profit of over \$9,000.

The sum does not include the rentals obtained from the exhibition fees of the big carnival exposition pavilion. With these rentals the total will reach \$16,000. The association will not declare a dividend this year but every cent of the profits will be used in permanent improvements. The plan of most of the directors is an enlargement of the present show, which will be larger and better than ever next year.

### SHOW POSTER

With the intention of securing the most attractive poster design for the forthcoming double automobile show in the Grand Central Palace and Madison Square Garden, New York, the show committee of the Automobile Board of Trade started an open competition. Lambert Guenther, of New York City, was the selected one, receiving the \$200 prize.

The poster will be printed in five colors. In the foreground of the drawing is seen a three-quarter view of a man at the wheel of a car with a young woman seated beside him, while the background is made up of an avenue scene in which automobiles, a sight-seeing bus and a motor truck are noted.

The background of the poster is a very dark blue and the lower portion, which is a section of the car's tonneau, is in reddish brown. The border and the car's upholstery are done in emerald green, while the lettering for the most part is in yellow, as are the high lights of the picture.



## NEWS OF THE RUBBER TIRE TRADE

The sixth building to be either built or remodeled by the Goodyear Tire and Rubber Co., and which was started November 16, will be 100 x 260 and seven stories high, the construction to be absolutely fireproof, of brick, steel and reinforced concrete; estimated cost, \$100,000. The company is constructing two new factory buildings, remodeling a factory building, an office building and an employment office. The total approximate cost will be \$400,000.

The Goodyear Tire and Rubber Co., of South America, has been organized under the laws of Maine with a capital stock of \$3,000,000. The object of the incorporation is to operate rubber plantations in South America and to manufacture the raw product.

C. W. Seiberling, vice-president of the Goodyear Tire and Rubber Co., says: "Our sales for the fiscal year ending November 1 approximate \$25,000,000. The contracts indicate that for the coming season we will supply to car makers 200,000 sets of tires. The demand for Goodyear tires has compelled us to add three new buildings. The company has acquired the entire property of the Akron branch of the Great Western Cereal Co., located on East Market street, just west of the company's present buildings. These buildings will be used for storage until such time as it is necessary to utilize the ground for manufacturing purposes. The three latest additions aggregate 335,300 square feet of floor space, which brings the total to date, 1,935,300 square feet, which equals a factory 60 feet wide, one story high and six miles long."

The Goodyear Tire and Rubber Co., Limited, of Bowmanville, Canada, has built two additional buildings, doubling its 1911 capacity. The company has purchased and remodeled a large hotel in Bowmanville to be used as a club house and has erected a new office building in Toronto. In March, 1912, the capital stock was increased to \$250,000, and in October it was again doubled. Mr. R. W. Hainer, of the Goodrich Company, has been elected general manager of the Electric Rubber Reclaiming Co., Barberton, O. The machinery is in place and the company is putting out standard goods.

The American Tire and Rubber Co., at its directors' meeting on November 18, passed a resolution requesting the stockholders at the next meeting to increase the capitalization from \$200,000 to \$500,000 to supply the needs occasioned by the growth of business. A new addition, 40 x 50, consisting of two stories and a basement north of the present plant, has been built for the manufacture of solid tires.

The Knight Tire & Rubber Co., of Canton, Ohio, has increased its capital stock to \$1,500,000. The increase in the capital stock is to provide a larger working capital and for future improvements and additions to the plant.

The St. Louis Tire and Rubber Co. will have the following officers: J. A. Swinehart, of Akron, Ohio, first vice-president and general manager, in full charge of the manufacturing end; H. C. Barker, of Carter, Collins, Jones and Barker, president and general counsel; William H. Glasgow, treasurer. In solids, the company expects to manufacture the "Krotz" tire, and a new pneumatic tire, every layer of the fabric of which bears an equal amount of strain. The company has bought fireproof buildings, already built, and will be in a position to place its goods on the market within a short time.

At a recent meeting of the stockholders and directors of the Miller Rubber Co., reports read by department heads showed an increase of this year's business over last year's of 60 per cent. In order to handle the immense volume of business and to be in a position to fill the many orders received for next year, the company is now erecting a new factory building 150 x 75 and three stories high. The land adjacent to and formerly belonging to the Franz Body Co., has been leased by the Miller Rubber Co.

The Roberts Manufacturing Co., of Trenton and New York, which was incorporated November 22, for \$1,000,000 under the laws of Delaware, plans to manufacture sectional inner tubes for automobile tires on an extensive scale at the plant which the company proposes to erect in Trenton. Mr. Roberts declares that the main business of the corporation will be the manufacture of the patent inner tube automobile tires. These sectional inner tubes are of the pneumatic order, but constructed along entirely new lines. There are ten sections of a tube to each tire. Each section has thirty-two cells running the length of each section, and each cell is filled with compressed air, and then the ends are vulcanized to prevent the escape of the air. When the inner tubes are placed in an outer tube or shoe they make a complete circle with close fitting joints. The advantage is that when a puncture occurs only a single section is destroyed, if it is destroyed at all, instead of the entire inner tube. By reason of the fact that there are thirty-two longitudinal cells, it is claimed that in an ordinary puncture the air would be let out of a small number of the cells and that the progress of the machine would not be seriously interfered with. By the use of these sectional tubes it is claimed that autoists will not be obliged to carry extra tires on the machine. Only one or two additional sections will be required. The sections are about ten inches in length.

At the annual stockholders' meeting of the Pennsylvania Rubber Co. held at Jeanette, Pennsylvania, in November, the office of chairman of the board of directors was created, to which Mr. Herbert DuPuy was elected, having retired from the presidency in favor of H. Wilfred DuPuy, who was elected to that office in addition to that of treasurer. General Manager Lewis announced that business had increased 75 per cent. over the previous year, and that contracts on hand would tax the utmost capacity of the plant during 1913.

Rebuilding tires is now one of the industries of Providence. The Invincible Puncture Proof Tire Co., of which Charles H. Graves is president, is taking old tires and making them over and guaranteeing 3,000 or more miles.

A new tire company has just been started in East Palestine, Ohio, under the name of the East Palestine Rubber Co. The president is Wilmer Dunbar; vice-president, A. S. Mauk, and the secretary and treasurer, Abram Hartley. The company is capitalized at \$50,000. It has started on its factory and is putting up a two-story building 50 x 110 feet, with a power house 35 x 50 feet. It expects to be manufacturing tires by the first of January.

The Fisk Rubber Co., of Chicopee, will sell \$1,000,000 of the new preferred stock, and with the proceeds will add to its facilities for manufacturing pneumatic tires for automobiles and bicycles, and will add thereto the manufacture of solid tires for commercial vehicles. The mills are being enlarged and an entire new four-story steel and concrete building 200 x 90 feet will be ready for the increased force of workmen by the first of the year.

## NEWS OF THE AUTO TRADE

The Gum Price Motor Truck Company, \$100,000, manufacturing automobiles, trucks and supplies, has been incorporated at Chicago by Harry E. Rice, Jr., Walter C. Haight, Paul Corkell.

The Motor Mechanism Company, to manufacture automobiles and auto parts, capital \$25,000, has been incorporated at Cleveland, O., by E. Younger, F. Castle, H. O. Evans, H. E. Gray, S. E. Sackerman.

The Kline Motor Car Company's plant at Richmond, Va., was formally opened November 19 by the arrival of the office force from the former home of the company in York, Pa. The

company will employ approximately 750 skilled workmen and will have a capacity of 2,000 machines a year. The new plant was built at a cost of \$100,000, and is complete in every detail.

The J. A. Landry Motor Car Co. has been incorporated in New Orleans, La., with a capital stock of \$25,000.

The Southern Motors Co. has been incorporated in Louisville, Ky., with a capital of \$100,000.

The Ralston Motor Co. has been incorporated in Omaha, Neb., with a capital stock of \$150,000.

Artemus Ward, New York capitalist and member of the advertising firm of Ward & Gow, has purchased the property of the King Motor Car Co., at Detroit, Mich., for \$40,000 and has placed the operation of the concern in the hands of his son, Artemus Ward, Jr.

Van Deman & Wainwright, general automobile business, Newark, N. J., capital \$100,000, has been incorporated by F. L. Van Deman, J. S. Wainwright.

The Kelly-Springfield Motor Truck Co., Springfield, O., capital \$2,500,000, has been incorporated by James W. Carroll, G. W. Patterson, H. B. Bradshaw.

The Warren Motor Car Co., of Detroit, Mich., has increased its capital stock from \$300,000 to \$600,000.

The Kansas City Automobile Co., of Kansas City, Mo., is about to erect a four-story garage.

The Kentucky Automobile Co., of Louisville, Ky., has increased its capital stock from \$65,000 to \$90,000.

The Cheesman Automobile Co., capital \$10,000, has been incorporated at Salt Lake, Utah, with M. R. Cheesman, president.

### LARGEST TIRE PLANT IN THE WORLD

The United States Tire Co. has made a start in carrying out its announcement made early this summer of constructing the largest tire plant in the world by beginning work on doubling the Morgan & Wright factory in Detroit. Ground has been broken for several new buildings and the work will be pushed as rapidly as possible. When completed there will have been erected 16 new buildings, ranging in proportions from 2,000 square feet to 131,000 square feet.

In addition to those assigned for manufacturing purposes, the structures will comprise a finely appointed laboratory and several enormous warehouses, also a huge boiler plant which will double the Morgan & Wright boiler capacity. All of the buildings will be of brick and reinforced concrete and those used for manufacturing will be equipped with the most modern machinery known to the rubber trade.

The Detroit plant when completed will have a floor space of more than 1,000,000 square feet, or twice its present size. It will also employ 6,000 workmen as against the 2,500 now employed, and its output, it is stated, will be in excess of 5,000 tires daily.

When announcement was first made that the United States Tire Co. was to build the "largest and best tire plant in the world," it was surmised that it implied ultimate concentration of its tire production in one plant, but that nothing of the sort is in view is indicated by the fact that, in addition to doubling the Detroit plant, the factories in Indianapolis, Hartford and Providence also are being or will be enlarged. In Hartford, a new power house and power plant has been built at a cost of more than \$175,000; in Indianapolis, a six-story structure, 800 x 170 feet, is being erected; and in Providence a three-story building, 75 x 300 feet, is to be constructed.

### LOUISVILLE GETS TRI-STATE CONVENTION FOR 1913

Louisville will entertain the Tri-State Vehicle Manufacturers' Association next. The decision to hold the convention and exhibition there from November 10 to 15 was made by the executive committee at a meeting at Cincinnati, December 3.

### AN INTERESTING TABULATION

To what extent interest is taken in motor trucks and their use by different lines of business is shown in the attendance at the commercial vehicle shows held in New York and Chicago.

A tabulation of responses received to invitations to attend last winter's shows has been made. Invitations were sent to 40,000 companies located in the territory embraced by the New England, middle Atlantic and north central states as far south as Tennessee and as far west as Oklahoma. Most of these companies have a financial rating of \$50,000 or more, indicating that they are capable of buying trucks and wagons.

About 7,500 companies responded and these are tabulated. As originally compiled, the list showed 225 distinct lines of business. In order of the number of replies received, the trades most prominently represented are as follows:

Building and contracting.....	482
Metal and hardware.....	392
Grocery .....	306
Machinery and tools.....	276
Light, heat and power.....	255
Dry goods and clothing.....	253
Furniture .....	223
Brewing and liquor.....	219
Expressing, teaming, etc.....	214
Coal and wood.....	205
Printing and publishing.....	176
City governments .....	155
Lumber .....	151
Textiles and dyeing.....	143
Paints, oils, etc.....	142
Heating, plumbing and steam fitting.....	126
Department stores .....	123
Storage and moving.....	117
Produce and commission.....	117
Steam railroads and equipment.....	112
Paper and paper box.....	111
Meat and packing.....	105
Boots, shoes, etc.....	100

It will surprise many to learn that 155 city governments were represented.

That the trades which have been most dependent upon horses heretofore are deeply interested in the motor truck, is shown by the fact that 407 teaming, storage and moving, expressing, delivery, wagon and carriage, hay, grain and feed and harness companies are listed. However, the building and contracting trades lead, with the metal, metal manufacturing and hardware trades well up toward the top of the list.

In the entire United States there are 4,700 department stores, of which 123, or about 1 in 38, are represented in the show list; there are 989 storage warehouses in the country, of which 78, or 1 in 12, responded to show invitations; and there are 26,500 printers and publishers, of whom 133, or 1 in 200, responded. But, whereas a storage warehouse, or printing and publishing house of the largest size might buy half a dozen motor trucks, a department store would require nearly half a hundred.

### THE HARTFORD'S OUTPUT OF BICYCLE TIRES

A great many people have the idea that the bicycle has lapsed into innocuous desuetude—to use a term quite popular twenty years ago. To be sure, one doesn't bump into a bicycle every time he goes out now, as he did some years ago, but evidently the bicycle is still affected by a very considerable part of the population—judging from the number of tires made for this comparatively inexpensive but convenient vehicle. Take, for instance, the output of one factory alone. The Hartford Rubber Works' factory manager says that two years ago they manufactured 230,000 bicycle tires; last year the number increased to 450,000; for the year 1912 he estimates 650,000, and for 1913 1,000,000 more, which would seem to indicate that bicycles were not only holding their own, but really growing in popularity.—India Rubber World.

## AUTOMOBILE PAINT SHOP PRACTICE

### Arrangement of Shop—Location of Work—Classes of Repair Work—Methods of Doing Work, etc., etc.

The first automobile shop essential is room located in such a way that practically every inch of it is available. The average carriage and wagon paint shop has been dwarfed and cramped and jostled into a corner to such an extent that men appear to go on thinking the automobile paint shop can be limited in size to the dimensions of a dry goods box.

Lack of room has ever been a handicap attached to the paint shop, and today more room is the urgent need of the shop in the horse-drawn and horseless carriage painting business. You may ask any number of painters in New York, Philadelphia or Chicago what the business needs most at this time and we venture the prophecy that they will tell you room. Give the painters ample working space, with fair accommodations, and good, workable labor-saving conveniences, and the rank and file of employees will give a good account of themselves. Not only is ample shop room in the highest sense desirable, but good light is about on a par with it in value. Natural light in plenty is a valuable asset of any shop, and lacking this, arrangements should be perfected for furnishing the necessary artificial light. The problem of adequate shop lighting, either natural or artificial, is an imperative proposition, and even in the smallest shop it cannot be ignored.

Ventilation is a like important matter connected with the shop. Not only does it exert beneficial effects upon the painted and varnished surfaces, but it contributes to the good health and physical welfare of the workmen. And all these things constitute the sum and substance of three chief factors having strongly to do with the prosperity of the business.

For the automobile paint shop doing a considerable volume of business the subject of a floor pit in which to work under the car in an upright position must appeal to the head of the business.

If one part of the shop is located upon the first floor with sufficient free room beneath to sink a pit anywhere from 3 to 3½ feet in depth the device can be arranged very nicely. However, opinions differ as to the utility of the pit for working purposes, it being held in some quarters as a dangerous affair and especially in garages where the danger from fire is great owing to the sides and bottom of the pit becoming saturated with gasoline. A substitute for the pit is the stout wooden horse, a pair of which arranged at parallel distances, with a stout plank incline, affords the means of getting the car up where the workman can nearly go about under it in an upright position. This for a number of reasons would appear to be safer than the pit which in case of fire has been proved to be an ugly trap. Plenty of stout wooden trestles, with solid blocks of wood for elevation purposes, heavy wagon jacks, bars, etc., may very well be embraced in the labor-saving equipment of the shop. So far as possible the larger cars as they come to the shop should be placed in permanent position in order to avoid the expense of extra moving about or handling. In so locating the car aim to place it in a way to catch the greatest volume of light upon the largest possible extent of surface, and at all events upon that portion of the surface offering the greatest difficulties to work over. In the least advantageous locations, or in broken spaces where the larger car could not possibly be located and worked around conveniently by the mechanic, the smaller cars may be placed. How to utilize every valuable inch of floor space is an important bit of knowledge in getting the most out of the least room.

Under such circumstances, moreover, it is good policy to plan, so far as feasible, for a special varnishing day during

which all the cars, or as many as may be handled in that day, at least, are to receive a coat of varnish. This will enable you to obtain cleaner and safer results than where a car or two is varnished, and at the same time in the same room, surfacing and other general painting operations are carried on.

In cleaning out a shop of this kind the hand dusting and broom brushing operations should be abolished in favor of the vacuum cleaning devices which are comparatively inexpensive and create no dust in doing their work. For window sills, shelves, moulding and all places upon which dust and dirt naturally accumulate, a damp cloth or sponge should be used. This method smothers the dust and prevents its spread to all parts of the shop as is the case when the ordinary duster is employed to dislodge it. The vacuum cleaner and the "wet method" of dusting has superseded the old time ways of cleaning shop.

#### Preparing the Car for Painting

All detachable parts of the car should be removed as soon as it is in position, such parts being carefully marked and stored away in a clean part of the shop especially arranged for such equipment. This insures quick assembling of the furnishings, and saves the expense of looking up parts which for the want of some special designated storage place are mislaid, or broken, or perhaps lost altogether.

In washing the car for painting or varnishing, both for the body and chassis, saturate the surface with a mixture of two parts turpentine and one part crude oil, and permit it to remain on the surface long enough to nip into the grease smears and splotches of hard, oily substances. Then with fine cotton waste wipe off the softened grease, after which run over the body surface lightly with pumice stone flour and water and wash up clean. The chassis, after cleaning off the grease, etc., are to be sandpapered and otherwise smoothed up for the pigment coats, unless the car is in for a simple touch up and varnish job, in which case instead of sandpapering go over the parts with a uniform rub with pumice stone flour and water. In case of touching up for varnishing use plenty of varnish in the match color which should be as close as the best colorist in the shop can make it. The varnish in the color prevents the absorption of light, this latter force being the factor that forces the pigment, upon drying, into an "off color."

Then, too, in touching up the defects on the body and chassis insist upon touching just the defect itself, and not any portion of the adjoining surface. Under the very best possible circumstances the least color applied the better, and the fewest possible spots touched, consistent with actual requirements, the better, in view of which only a careful and experienced workman should be delegated to the work.

#### Various Classes of Painting Repairs

Next to the straight touch up and varnish job is the one which calls for two coats of varnish, or their equivalent. The car is cleaned and made ready as above described. Then apply a coat of varnish color to the body surface, following with varnish color upon the chassis. In due time moss the chassis surface down and apply the requisite striping effects. Give the body surface a light, uniform rubbing with pumice stone flour and water to lay down the gloss. If required, run on the striping lines, and when dry pencil varnish them, after which flow on the finishing coat using all the stock the surface will take care of. Next varnish the chassis.

Surfaces that are much cracked up need a thorough sand

papering, and a coat of dead lead made thin enough to penetrate right into the heart of the fissures. Use the same material, if necessary, upon the chassis. Now take hard drying putty thinned down enough to work free and evenly from the point of a broad blade glazing knife, and glaze all cracked parts of the surface smooth and uniform. After 24 hours apply a coat of roughstuff, and two days after rub the surface with a rubbing brick dipped, as found necessary, in gasoline, or, if this is deemed unsafe, turpentine. Sand paper the chassis surface down and in due time apply color over all the car. Then use a coat of varnish-color, and, for a moderate priced job, stripe and finish upon this. For better results both in the matter of appearance and durability, use a good, rich coat of clear rubbing varnish over the varnish-color on both body and chassis.

In the event of a cracked surface upon which a first class job of painting is demanded, fetch the work along, as just noted, up to the putty glazing stage, whereupon instead of using a single coat of roughstuff, apply four, rubbing out in due course with water and rubbing brick. Then bring the work along with one coat of color, one coat varnish-color, one coat of clear rubbing varnish, and one coat of high grade body finishing varnish, changing this latter coat for the chassis to a heavy gear or chassis varnish.

Burning off of the automobile body surface is the last resort to incite which the surface must be in a desperate condition. In burning get the old scaly paint clean off and bring up carefully from the live, vital wood. Prime with a good lead primer mixed with three parts raw linseed oil and one part turpentine, or, if preferred, use a patent ready to use primer. From this priming coat bring a body of pigment along up to the roughstuff foundation fit to stand out, after rubbing, and hold all the coats bravely aloft.

As a final word, aim to offer your customer enough various ways of doing the repainting work that they may easily find a choice to suit their inclinations. The main thing is to suit the man who pays the bills.

### VARNISH—ITS NATURE

Varnishes in common use are three in number, namely: fixed oil varnish, volatile oil varnish, and spirit varnish. The first named varnish the most important of the three and, correctly speaking, has no solvent, it being necessary to melt its gum in order to make the varnish.

Volatile oil varnish is represented by dammar varnish, the dammar gum being dissolved by turpentine. There are several of these soft gums that may be dissolved by turpentine. They have neither durability nor gloss, being used chiefly for making enamel paint, or for varnishing maps, wall papers, etc.

Spirit varnish is represented by gum shellac varnish, the gum being easily dissolved with alcohol, either in the cold or warm state. Shellac has a very limited value as a varnish, its chief value being as an under coat for oil varnishes, or for interior finishes, for it is incapable of standing exposure to the weather. It is lacking in durability and elasticity.

The fixed oil varnishes consist as a class of vehicle, house, cabinet, and furniture varnishes. They are composed of a fossil gum, linseed oil and turpentine. The gum has the generic or family name of "copal," a name applying to all fossil gums.

Zanzibar gum is by far the best ever found but the supply seems to be practically at an end, the island of Zanzibar having been dug over by the natives several times, and the supply, very small at best, is yearly decreasing. New Zealand is now furnishing a considerable supply, and much comes from the Philippine Islands. That from New Zealand is known as kauri gum, and is the most useful varnish gum we now have in any considerable amount. The gum is a product of the karui-tree, which is still in existence, though the new gum has no value for varnish making. The fossil gum is found

in the soil, at no great depth, the natives locating it by prodding the earth with pointed irons.

The making of varnish is apparently one of the simplest of operations, involving merely the boiling of some gum with oil and turpentine. A certain quantity of the gum is placed in a copper kettle over a fire, where the heat slowly melts the gum. Then some prepared linseed oil is added and the mass is stirred, after which it is boiled some more, then some turpentine is stirred in, after which comes the straining and filtering, and the varnish is done.

But the utmost care must be exercised from the first in order to get a perfect result. The gum is first carefully sorted and graded, each grade for a certain class of varnish. Correct weighing of the gum is necessary. The cooking of the gum must be watched carefully, which is done by the cook with a stirring rod; the proportions of oil and turpentine must be just so. Guesswork is never permissible in making varnish. It requires years of experience to make a good varnish cook.

Another thing, although the same formula may be used, the same gum, etc., and the same varnish maker, yet there is one more essential to success, namely, uniformity of quality, which can only come from large tankage capacity and ample time for ripening. Unripe varnish will not, cannot, give good results. And this ripening cannot be produced by artificial means. It is said that whiskey may be made old in 24 hours. Not so with varnish. It requires from three to twelve months, according to the grade.

In order to allow the varnish ample time or aging it is necessary to have a vast quantity of it in tanks, and this is one of the heaviest items of expense in connection with its manufacture. To fill orders, however large or frequent, means to keep up a large stock of the fluid. Hence it is that some inferior varnishes might be excellent if only they had time for ripening. A varnish lacking age will cause trouble in sweating out.

The varnish maker has hundreds of formulas for making varnishes, from the best down to the worst, or perhaps it should be said, down to the cheaper ones that are just as useful for their purposes as the costly ones are for theirs.

There are many varnishes for many purposes. It is very important to select the right varnish for the work in hand. Even price alone will not guide one. We may think that as the work in hand is low cost work we may as well take any low cost varnish, but there may be one of the low cost goods better for this particular purpose than another of the same class. This is why a finisher should have a good working knowledge of the nature and methods of manufacture as well as the uses of varnishes. Correct knowledge along this line would enable him to avoid many varnish troubles.

Most responsible varnish makers make varnishes for all special purposes, and it is safe enough to use these upon faith rather than take chances when one is not well versed in varnish making. It may safely be believed that the best varnish is the cheapest, and probably no one who buys and uses varnish in a commercial way, as in a finishing room for instance, will dispute this, though they no doubt will say that it must often be a matter of price. We all know that it takes just as much time to apply a poor varnish as a good one, and we also know that varnish is great for spreading over a surface, hence a little goes a long ways and would often seem to warrant good goods when very inferior ones are used.

One of the most important matters pertaining to the varnish room is ventilation, to allow of the carrying away of the gases arising from the drying varnish, and to provide a free circulation of fresh air, without which varnish will not dry properly. Often a poor luster is due to an impure air, for it is well known that plenty of fresh air, barring drafts, will produce a better gloss. Drafts, particularly cold or damp drafts, are bad for a varnish room, and are to be avoided and watched for, especially in changeable weather. It is a good plan to have

hinged windows inside of the regular windows, these not affecting the entrance of light, but preventing drafts.

The varnishing done in the morning has all day for drying in, which is desirable, as then the temperature is not so variable as at night time.

The varnishing room should be tight, but yet have ample provision for ventilation, the fresh air coming in near the floor and having an exit near the ceiling.

An even temperature is important, and a pretty high one, say, 72 degrees. Varnish spreads much easier when work and varnish are both warm.

Steam or hot water heating in winter is the best kind, much better than a stove or hot air heat from a furnace. If a stove is used, then let it be in an adjoining room, with the heat entering through a pipe.

In the varnishing room should be a closet for keeping the brushes and cans of varnish, also the varnish pots or cups. Keep the varnish brush clean all the time. Put it away clean. A half-elastic brush is best, for a too stiff bristle will cut the varnish and show through; or if too soft of bristle it will not spread the varnish well.

Give the filling and varnish coats plenty of time for drying. Soft or undry under coats will absorb the oil from the upper coat and cause sinking in, sweating, etc.

Beware of greasy fingers and moisture, temperature variations, etc., and all other like evils that cause trouble.

If you would have a full gloss never work the varnish much with the brush, but flow it on quick and deftly.

It is surprising to see how careless some varnishers are when it comes to applying the rubbing, the result of which is seen in ridgy surface that will take a lot of work to make smooth. Take time and pains to get the coat on smooth and level and of uniform thickness. This will save you hours maybe of hard rubbing, with a possibility of a good job with hardly any rubbing.

When the vehicle varnisher rubs out a job it is with a view to getting a level and smooth surface for the finishing coat, which always is a gloss. It is not necessary to have any brush marks to rub out if you will apply the varnish right.

Some varnishers advise a little finishing with the rubbing varnish, say one tablespoonful to the pint of rubbing. But oil never should be used for slowing up a too quick rubbing varnish. It is a good rule, too, to doctor varnish as little as possible, it being better to get the right kind, one that will require no doctoring.—A. A. Kelly, in *Wood Craft*.

## ORDERS FOR 1,098 NEW WAGONS

Orders for 1,098 wagons, which were accompanied by specifications, and for several hundred more, the specifications for which are to come later, were received by the Kentucky Wagon Manufacturing Company in one week in November. This is the largest number of orders received by the firm in the 33 years it has been in business.

Practically every section of the country is represented in the requests for wagons, and many and varied are the designs submitted for carrying out at the local plant. The time of delivery is as varied as the types to be built. Some are wanted at once, others in a few weeks or a month, and still others will not be shipped until next spring.

W. C. Nones, president of the company, when asked what, in his opinion, was responsible for the large number of wagons wanted by farmers, from whom most of the orders came, replied: "I think it is due to the good crops of the last summer and to the fact that for several years farmers have been patching up old wagons in order to purchase automobiles. The patched-up wagons could not last forever, and the time came when they just had to be replaced. It is fortunate that this time did come at the end of one of the most profitable seasons in years."

## NEW SOURCES OF WOOD OIL

New sources for the supplying of wood oil to American paint manufacturers may be opened up within the territory of the United States, if the experiments at present being carried on by the United States Department of Agriculture prove successful. Wood oil is produced from the nuts of the "tungshu" tree (*Aleurites fardii*) of China, and at present practically the entire supply comes from that country. The normal price of this oil is 60 cents per gallon, and in the fiscal year ended June 30, 1911, the United States imported about 5,000,000 gallons.

It is known that the wood-oil tree will grow along the Pacific coast, south of Sacramento, and in the Gulf states, possibly up into Georgia and South Carolina. As yet, however, there are no groves of these trees in the United States from which data as to the possibility of producing this oil in commercial quantities in this country can be obtained.

Another possible source of supply is opened by the work of Dr. E. V. Wilcox, director of the United States Department of Agriculture's experiment station in Hawaii, who is investigating the percentage of oil obtainable from the kukui nut (*Aleurites moluccana*, or candlenut) which grows abundantly in Hawaii and the Philippines. These nuts yield an oil having the same properties and uses as wood oil, which was formerly exported in large quantities. If the nuts can be gathered and the oil extracted profitably, this oil should compete in the American market with Chinese wood oil. It is proposed to employ children and old people to gather the nuts, a method which has proved very successful in Hawaii in obtaining supplies of algaroba beans for the manufactures of feed stuffs.

## POLISHING FELTS

Hard felts for polishing metals and other substances have been in use in Germany for many years and are extensively manufactured. The felt for polishing is usually made from sheep wool, cow and calf hair which has been carefully cleaned to free the raw materials from sand and other impurities. After being carded the hair is subjected to a treatment of sulphuric acid and then pressed into felt by processes which vary with the degree of hardness desired. The felt is then placed in a lathe and turned to the diameter required.

For polishing metals, after the periphery of the wheel is roughened, it is covered with good glue and allowed to dry for about two hours. A paste consisting of glue and emery of a granulation depending upon the kind of polishing to be done—fine, coarse, or medium—is then applied and the surface rolled in loose dry emery of about the same granulation. After drying in a warm place for six to twelve hours the wheel is ready for use. For polishing or grinding glass the wheels are usually treated with silicious varnish or glue.

## FOREIGN COMPETITION IN COACH BUILDING IN ENGLAND

A lecturer at the Huddersfield Technical College is reported to have said that foreign competition is greatly affecting the coach building and motor body trade in the United Kingdom, principally because foreign producers and makers have received a higher degree of skilled knowledge at the technical schools, where artistic taste, as evidenced by the quality of the finished work, is largely cultivated. Investigation, he said, showed that in the most successful manufacturing firms the managers and foremen of the various departments had attained high rank in the study of technical science as applied to these trades, and that there was a growing necessity in England for meeting this competition by more skilled workmanship and more highly cultivated taste. This object the Worshipful Company of Coach Builders of the Kingdom is seeking to accomplish, he said, by establishing classes for instruction in their special kind of technical work.



## NEW YORK STATE MAY LIMIT WEIGHT OF TRUCK AND LOAD

The New York State Highway Commission is engaged in framing legislation having for its object the limitation of the weights of motor trucks permitted to use the highways.

The idea of the commission is to bar from "any state or state and county highway which has been or may hereafter be improved by the state or state and county, any vehicle the weight of which shall exceed, in combined weight of load and vehicle, as related to the width of tire, the weight per width as given in the following table"—the table specifying that the maximum weight on a single axle shall be, for 1½-inch tires, 1,200 pounds; for 2-inch tires, 1,600 pounds; for 2½-inch tires, 2,000 pounds; for 3-inch tires, 2,400 pounds; for 4-inch tires, 4,800 pounds; for 5-inch tires, 5,600 pounds; for 8-inch tires, 6,400 pounds; for 9-inch tires, 7,200 pounds, and for 10-inch tires, 8,000 pounds. In other words, four tons is the maximum weight permissible, under the proposed measure, on any one axle, except on state or county roads "built of brick laid upon concrete base" or "highways having a roadbed of concrete six inches or more in thickness." These exceptions, of course, are of extremely limited value, because of the comparative scarcity of roads of the excepted kinds.

Another suggested method of limiting the weights of motor vehicles consists of specifying the total combined weight of vehicle and load to be allowed to use the highways. This works out to exactly the same maximum limit, as the greatest weight specified is 16,000 pounds on 10-inch tires. The complete list is as follows: On 1-inch tires, 1,600 pounds; on 2-inch tires, 3,200 pounds; on 3-inch tires, 4,800 pounds; on 4-inch tires, 6,400 pounds; on 5-inch tires, 8,000 pounds; on 6-inch tires, 9,600 pounds; on 7-inch tires, 11,200 pounds; on 8-inch tires, 12,800 pounds; on 9-inch tires, 14,400 pounds, and on 10-inch tires, 16,000 pounds.

As a rule, large motor trucks are of about the same weight when empty, as their maximum rated loads; in some cases the truck weighs considerably more than its load. Moreover, in many trucks the weight on the rear axle is very much in excess of the front axle weight load. Under the provision limiting the load on a single axle to 8,000 pounds a four-ton truck would be an impossibility unless the weights were exactly equally distributed on the axles and the truck weighed no more than its load—conditions that would put all the four-ton trucks now built off the roads.

The road experts who are credited with instigating the proposed measures are said to have been prompted by the idea that heavy trucks are destructive to the roads and that by arbitrarily limiting their weights with loads the highways will be better preserved.

The Highway Commission of New York state is not alone in this matter; similar movements are afoot in New Jersey, Massachusetts and Pennsylvania, and in all the states concerned the dealers and manufacturers of motor trucks are preparing to oppose the passage of any such measures, should they come before the respective legislatures.

## RECEIVERS SHOW NICE REPORT

Theodore D. Gere, one of the temporary receivers of the Champion Wagon Co., Owego, N. Y., made application to be relieved from that position before U. S. Judge Geo. W. Wray, on November 30, so that he could devote his entire time to the Empire Electric Vehicle Co., recently organized by Mr. Gere and Frank B. Tracy.

Since Messrs. Gere and Hill were appointed receivers on December 9, 1911, and took charge of the Champion Wagon Company's affairs, the amount of business that has been done will exceed \$126,000 and a nice profit was earned for the creditors.

## S. A. E. WINTER MEETING WILL BE HELD IN NEW YORK'S NEWEST HOTEL

The annual winter meeting of the Society of Automobile Engineers will be held three days beginning January 16 at the Hotel McAlpin, corner of 34th street and Broadway, New York City, instead of at Madison Square Garden. The session is to be preceded by a meeting of the Standards Committee, which will be held at the headquarters of the society at 1786 Broadway, on Wednesday, January 15; it is called for 9:30 in the morning.

Business and professional sessions will be commenced at 9:30 on Thursday morning, January 16, and will be continued in the afternoon at 2 o'clock and on Friday morning and afternoon. Friday evening, January 17, has been reserved for the annual dinner, and business will be suspended with the termination of the last session on Saturday morning.

Among the papers and reports which will be discussed at the meeting, some of them having been held over from the summer meeting cruise, are: Effect of Relation of Bore and Stroke in Automobile Engines, by John Wilkinson; Stability of Automobile Propeller Shafts, by J. M. Thomas; Method of Brake Capacity Determination, by S. I. Fekete; Leaf Springs, by L. J. Lane; Standardization of Drawings, by George W. Dunham.

The following subjects will in all probability be treated of either in papers or by discussion: Motor sizes for trucks; comparative data on motor tests; relation of road testing to dynamometer testing; worm gears; magneto couplings; relation of design to construction of motor cars; will the six-cylinder motor eventually displace the four-cylinder motor for pleasure cars? Is the transmission preferably located on the rear axle as a separate unit or combined as a unit with the power plant? Why has the 42-inch wheel been discarded? With the electric starter, lighting plant and ignition possible in one unit, will the magneto be discarded? Wire wheels.

## TWENTY-FOUR HOUR TIME INDICATIONS ADOPTED BY SWISS POST OFFICES

New motor-driven machines for canceling the stamps on letters have been recently furnished by the Post Office Department to the head offices at Geneva, Lausanne, Basel, Neuchatel, Lucerne, St. Gall, and Zurich. A new system of indicating the time when the letter was canceled has been adopted, and the machines are now furnished with dies upon which the hours of the day are marked from 0 to 24, thus doing away with the old a. m. and p. m. system. The time from 1 o'clock at night till midday is indicated by the old figures 1 to 12, and from 1 o'clock p. m. till midnight by the figures 13 to 24.

## A LITTLE LIGHT ON TIRE ADVERTISING

An advertising agency, which has special facilities for informing itself regarding the advertising being done and being planned by the tire manufacturers, has furnished us with a list of ten of the leading tire makers, together with the amount of their advertising appropriation for the current year. These appropriations range from \$20,000 to \$450,000. One company is spending this large sum; one other appropriated for the year \$350,000; two others \$250,000 each, and two others \$100,000 each. The aggregate advertising appropriations for these ten companies amount to \$1,666,000—a very substantial sum certainly. And yet this represents the advertising outlay of only ten companies; and this list, while to be sure it includes most of the large companies, does not include them all. It would undoubtedly be safe to say that American tire manufacturers all together are spending this year at least \$2,500,000 in advertising. This is about two per cent. of their gross receipts from tires, so that while the amount seems large, considered on the basis of percentage of the business done, it is not at all extravagant.—India Rubber World.

## FIRST AID IN SMITH SHOP

There is a whole lot of chimney-corner logic and old household remedies that, while respect is due them for the good they have done, are entirely out of date these days and should be left alone. Generally speaking, the modern industrial institution in the matter of first aid has left behind most of these old things, but now and then some of it pops up again. For example, there was in one of the technical papers recently a recommendation that for burns a good practice is to use soap. It is said to beat all the patent compounds gotten up, and it is nearly always handy; that lather keeps out the air and draws out the inflammation.

This is enough to remind us of the days when a workman cut himself, picked up the oil can and poured oil on it, or if he were a carpenter, stuck his finger in linseed oil or smeared a little varnish on; but to advocate these things in the present day is nonsense. Indeed, it may be even worse than nonsense, because the results were sometimes fatal.

Blood poisoning we knew but little of in early days. A case of it was seldom known, and it said by those versed in that subject that it is the result or product of civilization. No matter what it is, it is prevalent enough now that we should take every precaution against it. The old time remedies that we used to depend on do not safeguard one against it; indeed, because of the practice of adulteration and substitution, they may in themselves contain the very germs of poisoning.

Take the matter of soap. There are more kinds of soap and more chemical compositions enter than a man can enumerate. Some of them may be perfectly pure and healthy, but to advise a man to use a soap that is lying around the factory, dirty, used by everybody to wash with, as an application to a freshly opened wound of any kind, is really worse than nonsense.

For just such occasions there are remedies that can be had and kept on hand in any plant. There is a chemically pure peroxide of hydrogen. There are quite a number of other things that might be kept in shape for first aid work.

Since to advocate or practice some of the old family remedies is not only offensive to a man who is up-to-date, but is dangerous to the life of those using it, let us steer clear of this first aid nonsense. Get the best authorities and keep the best remedies on hand, because there are enough injuries and enough loss of life and limbs without adding to the casualty list through the use of remedies that are themselves dangerous and sometimes fatal.

## SILENT BEVEL GEAR

There is no question but that the most important, and, so far, the most difficult obstacle to surmount in the perfection of the bevel drive is the question of silence. Hardening proved troublesome for some time, but latterly this question has become subservient to that of obtaining silence in the actual running of the gears, and we have been able to obtain some details of an entirely new and secret steel alloy which is being used for bevel drive gears. The steel is an entirely new alloy, which has the advantage of giving an extremely hard skin, so hard that it will easily cut glass, and with an annealed fibrous core of something like 45 tons per square inch, and with 25 per cent. elongation on 2 inches, with but 65 per cent. contraction of area. At the same time, with all these advantageous attributes, there is a relatively low elastic limit of 25 tons per square inch. All this may not have much special interest to the user, but it has a very important bearing on the silence of future bevel gears, and to those connected more intimately with the mechanical side of the industry the low elastic limit will no doubt be interesting, as, of course, it renders the work of machinery comparatively easy and likewise quick. Not only is it necessary to get silence, but that silence must be long-lived, and the gears themselves must likewise possess long life and this can only be effected by careful cutting of the

gear itself in combination with a special process in hardening and, of course, the requisite alloy of steel to suit. After having passed the gear-cutting process, the wheels are then tested under varying loads and speeds, and in the event of their proving noisy in any way they are at once sent back to the machine room for a recut. Assuming that they now pass the test satisfactorily, they are then hardened, and once more tested. Only the actual surfaces required to resist wear are hardened, part of the process being the drawing of an exceedingly hot flame of a specially constructed oxy-acetylene blow pipe across the tooth faces or kindred surfaces. The temperature of the flame is so high that the surface of the steel to a depth of, say, 1/32 in. or 1/16 in. (as the article being hardened may need), is instantaneously raised to the requisite hardening temperature. The flame passing along quickly, a rapid fall of temperature takes place owing to the absorption of heat from the heated surface to the remaining cold portion of the tooth, and the net result is a dead hard skin. It will be seen that by this special process the hardening of each tooth, even when hardened with the main body of the gear wheel, there is no general heating, and consequently the springing or distortion of the whole is so infinitesimal as to be entirely absent in practice effects.

The results of tests made with weights falling from a height of 6 feet on to the tooth of a wheel thus hardened show that, although the tooth has been very badly battered and bent by 47 blows from a 22 lb. weight falling from a height of 6 feet, there is absolutely no sign of flaking or chipping, which defects are usually found to be the results of such tests on a case-hardened tooth. There is no doubt but that as time goes on a great amount of thought and energy will be concentrated on the perfection of the car, and it is as well, therefore, briefly to point out how much time and energy may be spent on such a thing as producing a suitable bevel gear steel, and then so case-hardening it as to be able to render the final drive silent.

## SMITH-SHOP EFFICIENCY

There are a great many things to be considered in shop efficiency. Every foreman is trying to have harmony with discipline among the men in his shop. No shop can attain high efficiency unless harmony exists. To produce this you should have as much light in your shop as you can by keeping your windows clean. If possible have the walls whitewashed every year. Do not let the finished material lie on the floor of the shop. Put it on the outside in a pile, not scattered. Also have a place to receive the material to be repaired. Don't let it into the shop until you are ready to repair it. In this way you will have no accidents on account of not having room for the men to work and will do a great deal more work per man than if hemmed in by a lot of old and new material. You must have a good organization in your shop. It is up to the foreman to be the leader in the organization as well as the organizer. The best type of shop system is gotten not from the outside, but in the shop itself through careful analysis of its special conditions and requirements. System advice from the outside will help, but you should not be controlled by it. See that a broad view of all subjects be taken and provisions made for dovetailing them together. Don't issue any orders unless you intend to live up to the order and don't issue too many. Be always on the lookout for improvements from any responsible quarter to cheapen the cost of the material manufactured.

In adjusting the improvements be careful in selecting that which will give the best results. Also one of the best things in shop efficiency is to have your machinery kept in good repair. This will go farther to keep the shop up to the standard. There is nothing worse to look at in a shop and which lowers the efficiency more than a machine neglected or tools not taken care of. Steam pipes and air pipes blowing or leaking are also some of the things that lower the efficiency of the shop.—American Blacksmith.

## ELIMINATION OF THE CHASSIS

Present ideas governing motor vehicle construction will undergo alteration in the course of time. Some of the new ideas may be radically opposed to what at present is considered basic design. One way in which a change may be brought about is in the elimination of the chassis in order to secure better interchangeability of parts. Radical as this conclusion may appear, there is much to base it upon, despite the fact that it apparently argues a reversion to type.

Years ago there was exhibited at one of the shows a touring car which was remarkable in that it was frameless, the function of the ordinary frame being fulfilled by the body itself, which was of pressed steel, suitably shaped for strength, and autogenously welded into a single piece. The body and frame thus being formed as a single and substantial unit, the attachment of the axle units and the power and transmission units became a relatively simple matter.

In French practice a somewhat similar scheme has been adopted in connection with the use of a peculiar and radical form of power plant which forms a unit with the torsion member. As worked out for light vehicle purposes, especially with regard to the demands of the small public service cab, this system develops an astonishingly light and simple vehicle.

A third and even more striking example of the frameless principle is that of the new Daimler omnibus, brought out in England. In this vehicle, not only is the frame developed in the body structure, but the basic idea has been carried out in a very thorough manner. Either of the two power and transmission units may be dismounted without disturbing the body in any way and with only local disarrangement of parts; each unit is entirely independent of the other; the body framework structure is economically designed, as is evidenced in the use of the walls of the fuel tank for purposes of reinforcement against weaving; and the net result is that the machine is shorter, has a wider steering lock and handles better in every way than the conventional type of vehicle which it is designed to replace.

The chassis was fixed upon as a suitable form of construction at a time when builders were suffering the results of inadvisedly mounting parts subject to heavy stresses upon lightly built wooden bodies and frames. It also was favored because of the facility which it offers for divorcing the construction of the running gear and coachwork, thus permitting interchangeability of bodies and also affording the buyer limitless option in the choice of the externals of the machine. These arguments always will hold true with respect to machines in which the interchangeable body feature is a desideratum. For cars built for the big-volume, low-cost market, and for commercial vehicles, however, it is by no means unreasonable to predict that the chassisless style of construction will be employed quite extensively in the future. It has many features to recommend it, by no means least of which is the combined advantage of ample strength with low manufacturing cost.

## ALFRED REEVES TO HEAD HARTFORD SUSPENSION CO.

Alfred Reeves has been elected vice-president and general manager of the Hartford Suspension Company of Jersey City, which manufactures the Hartford shock absorbers, electric self-starter and lighter, and other motor car specialties.

Having acquired a substantial interest in the company, Mr. Reeves will assume his new work early in January or just as soon as he is relieved of his duties as vice-president and general sales manager of the United States Motor Company, which position he resigns in order to join the Hartford Co.

Probably no man in the industry has a wider acquaintance or is more favorably known among manufacturers, engineers, and dealers, than Alfred Reeves, and, coupled with the inventive genius of Mr. Hartford, may be expected to bring the company's product into even greater prominence than before.

## WORM, BEVEL, CHAIN DRIVE

There is little prospect of chain drive type of gear becoming common, notwithstanding its quiet running qualities, ease of changing speed with the system of dog clutches employed, and the fact of the chains effectively standing up to their work for some 8,000 miles before an inexpensive renewal is necessary. The Dennis is a car in which a successful type of chain gear box can be inspected, and is worthy the attention of enthusiasts of chain drive.

The worm drive has found quite a number of advocates owing to the demand that has steadily increased for a "silent" car. The Dennis and the Lanchester may be considered the pioneers of the worm gear, and the reliability of these cars is well known. The majority of motor buses now running in London are fitted with worm gear, and this applies to most of the new models of commercial vehicles now being manufactured.

Although there has always existed some prejudice against the worm mechanism, provided certain essential principles are observed, this gear can hold its own in comparison with the bevel drive.

The worm mechanism is proved to possess an efficiency of about 95 per cent., and to maintain this practically unimpaired through long periods, and with absolute silence in running. In touring car construction it is now in general use by Daimler, Napier, and Maudslay. Dennis have from the first given a guarantee of two years with their worm gear, and can show gears of this type which have been in use some seven or eight years, and have run a total of 150,000 miles without showing appreciable wear. The bevel drive still remains predominant in the 1913 car, owing principally to the fact that in addition to the existent points in its favor (in the form of its capability of running with a minimum of attention, and that the axle casing can be constructed to give a high clearance), there has been a considerable amount of time and money expended in producing and hardening gears in a manner that removes any further doubt about noisy running; absolute silence being an accomplished fact.

This is European opinion taken from Olympia observations.

## SMITH SHOP NEEDS

The carriage smith shop can't afford expensive pyrometers and other laboratory tricks, nor spend the time to use them.

The shop needs the practice and results, but a quick lunch method of getting to the point.

A furnace can be heated up to needed temperature quickly and surely to do the required hardening or heat treatment called for especially these days when automobile parts are coming into the shop for proper repairs and handling.

There is a method for heating steel—or anything else, for that matter, which can be gotten inside a furnace—to any desired predetermined temperature between 1,400 and 2,400 degrees Fahr. The electric furnace is the appliance which will do this to perfection and one of these furnaces can be set to give any required temperature within the above limits, by simply changing the voltage of the current, which may be single or multi-phase, according to the number of electrodes with which the furnace is fitted.

A two-electrode furnace, 7 x 9 x 15 inches will contain most of the work required in a shop, and such a furnace will consume about 8 kilowatts of current at 1,400 degrees, 9 kilowatts at 1,550 degrees, 16 kilowatts at 2,100 degrees, and about 22 kilowatts when heated to 2,350 degrees.

## CANADIAN EVERITT PLANT TO BE MOVED

The Tudhope Motor Co., of Canada, which reproduces the Everitt (Flanders) car in the Dominion, has purchased a site of ten acres in Windsor, Ont. When the necessary buildings are erected it will remove from Orillia, Ont., where it now is located.

## LIMOUSINE WITH FOLDING BACK

The tendency to use bodies which can be readily converted to either an open or closed carriage without the trouble of having detachable bodies is receiving consideration. Cooper's Vehicle Journal gives an example.

The drawing shows a type of body which may with advantage serve as a limousine and a three-quarter landaulette, which has all the advantages of the limousine, both with regard to appearance and inside room. In some respects it is superior to the three-quarter landaulette, inasmuch as it will preserve a better appearance. The head of the body may be put down any number of times, and it will not materially affect the appearance of the car. In our limousine the leather is only required



to cover the round corners, and they always stand out equal to the panels, for they never get baggy, and they always carry a high light.

Many raise objections to adaptable bodies, saying that they make a noise, and that they are heavy, but these are disadvantages which really result from bad construction, and should not occur if the right amount of attention is given to the working parts.

In the design of the body we have shown a rotund seat for the driver; this balances with the rotund panel at the back.

The main doors are of standard measurements, with ordinary crest panels, but it will be noticed that we have carried the elbow line up to about  $2\frac{1}{2}$  in.; this gives us a deeper pane., which is in better proportion to the rest of the body, besides giving a characteristic line to the elbow.

The general arrangement is perhaps a little novel; it will be seen that the head opens from behind the hinge pillars. This is done by hinging part of the roof to allow same to fold upwards and forward and rest above the doorway, the back part of body folding down in the ordinary way, carrying with it the rear part of roof.

The head is supported, when down, by two side irons working on pivots fixed in a position above the hinge center; these stays work quite automatically, the slot in the upper part working on a fixed prop at the top of the pillar. Care must be exercised in determining the length of slots in the upper part of stays, or the utility of the stays as head support will be entirely lost should the slots be cut too long; further, the appearance of car would be affected should the head sag out of the horizontal when down.

Taking a casual look at the drawing, one might think that the short part of roof when down would be liable to catch the occupant's shoulders, but it is not so. There is a squab which will set the occupant forward, and that same is made up on a false back carried high enough to come in line with the top of roof.

In examining the method of construction we must consult all views, one with the other. In the half plan we show the outline of the runners, set out to take the well sides, the bottom boards, various bars across body, and providing a strong foundation for the body on the chassis. From the back of the chassis bracket piece to the front pillar the runner is parallel, section of which is shown in the front view; this part of the runner takes the front boot side.

From the hinge pillar the runner tapers to the back, allowing for the hind contraction well. From the back of hinge pillar to the inside of shut on the front pillar the runner is marked off, and the bevel on the hind well is continued. This line is often called the wedge piece.

By adopting this method it makes it easier to frame the hinge pillar into the rocker, and gives a flat plant to work this framing on.

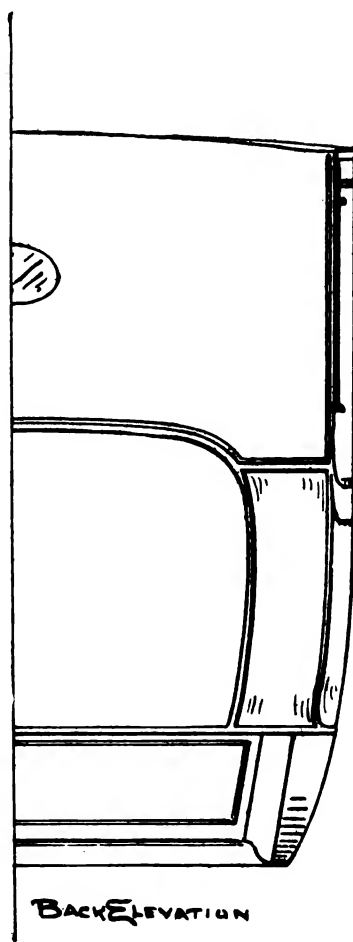
The front standing pillar, the inside bevel of which is carried from the bottom of the front boot to the top of waist rail, is fitted and fixed up on the front boot, supported and kept in position by the waist rail and the top rail.

The bottom sides can be got out of  $1\frac{1}{4}$  in. ash, screwed to the top of well side, with cross piece to take back panel, also cross bar for front edge of hind seat.

The back corner laps must be kept within the round corner of the seat; care must be taken when getting out the timber to allow for the bevels on side and back.

Into the bottom sides we frame the quarter pillars, which will have to be strengthened by light steel plates carried right down the inside of boot and fixed to the runner.

There will also be two bars shaped out to back panel line framed into the bottom side across back. These should be kept wide enough to take the horseshoe moulding, as shown



on the half-back view. A top rail goes from one quarter pillar to the other, which takes the back panel and the corner panels. The upper quarter framing will be got out of specially selected ash—something that is well seasoned, light and clean, so that it will hold the paint well. The quarter elbow piece should be lapped right across the hinge pillar and carried right to the

break of the folding pillar, so as to ensure good fixing, at the same time not showing any unnecessary length of joint. This piece will be boxed down and jiggered out for the elbow panel, also the top edge will be boxed out for the waisting.

In the top half view we show the arrangement of the roof, and it will be noticed that we have lapped in two bars connecting the hoop sticks; these are intended to take the top hinges which carry the front part of the roof forward. You will also note that the back compass stick is supported by two short bars connecting same with the hoop stick which is framed to the top of folding pillars.

In the half front view we show position of front boot and the setting out of the front pillars, also we frame in two upright bars to take the finish of the front seat, for it is unnecessary to carry same right across. We have allowed for the front glass to drop right down.

With regard to the plating of the body, it would be advisable to strengthen the hinge pillars with light steel plates, also two plates carried down the quarter pillars (as previously mentioned), two plates to support hoop stick at top of hind standing pillars, two light plates from bottom sides up the back panel bars, two light plates round the inside of elbows at back corners, also two plates fitted to the front seat board and carried up to the elbow on the inside.

With regard to the head work, there will be two hinges to carry front part of folding head, as will be seen on the side view, and in the small sketch of hoop stick, they are to be made strong, and are of a special pattern. The shorter part of roof is hinged to the folding pillars, and these hinges are also of a special shape. The folding pillar hinge should be made out of  $1\frac{1}{4} \times \frac{3}{8}$  in. steel, and carried well up the inside of the pillars working on a strong pivot.

Special attention will have to be given to the making of the water plates; the front water plate will have to be specially made to clear the hinges.

The head can be kept in position by extra strong (wrought iron plated) head locks.

It is perhaps advisable to fix up the two working parts of the roof where they meet with two special lever locks, either on the roof or the inside near the outside edge of body.

The framing up of the driver's seat is in the ordinary, but being rotund seats care must be taken when framing in the back piece. With regard to the general finish, all mahogany panels should be canvased; the main back and side panels to be blocked.

The roof boards should be got out of  $\frac{3}{8}$  ply wood and covered with moleskin.

Arrangement should be made for ascending steps to be fitted on hind wing just about the center of wheel, so as to enable the chauffeur to fold the roof from the outside.

#### Chassis Measurements

	ft.	in.
Dash to back of chassis.....	8	4
Dash to back of steering wheel.....	2	2
Dash to center of hind wheel.....	7	5
Rise in chassis.....		2
Width of chassis.....	3	0

#### Main Body Dimensions

Depth of driver's seat.....	1	7
Length of body on elbow line.....	5	3
Rise of elbow.....		$3\frac{1}{2}$
Width of door.....	2	0
Depth of door in center.....	2	6
Height of front seat from bottom boards.....		$10\frac{1}{2}$
Height of hind seat from bottom boards.....		$9\frac{1}{2}$
Head room from seat boards to under side of hoop stick.....	4	0
Widest part at elbow line.....	4	8
Widest part at top.....	4	$9\frac{1}{2}$
Width across body seat rail.....	3	6
Width across front pillars at elbow.....	4	2
Width across toe of front pillar.....	3	2
Turnunder.....		$5\frac{1}{2}$
Width of front boot at bottom.....	3	0
Width of front boot at top.....	3	$2\frac{1}{4}$
Width of contraction well at top at front.....	3	10

Width of contraction well at top at back.....	3	5
Width of contraction well at bottom at front.....	3	6
Width of contraction well at bottom at back.....	3	2

#### Window Frames

Door frames,  $24\frac{1}{2} \times 18\frac{1}{2} \times \frac{1}{2}$  in.

Side frames,  $24\frac{1}{2} \times 28 \times \frac{1}{2}$  in.

Front frames,  $24\frac{1}{2} \times 41 \times \frac{5}{8}$  in.

Back light,  $8 \times 5$  in.

#### Panel Boards

Door panels,  $25 \times 25$  in.

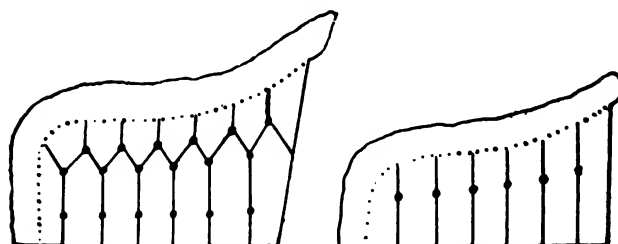
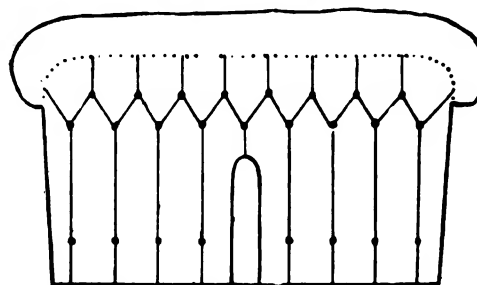
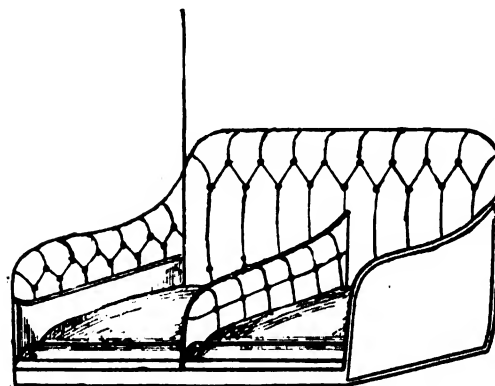
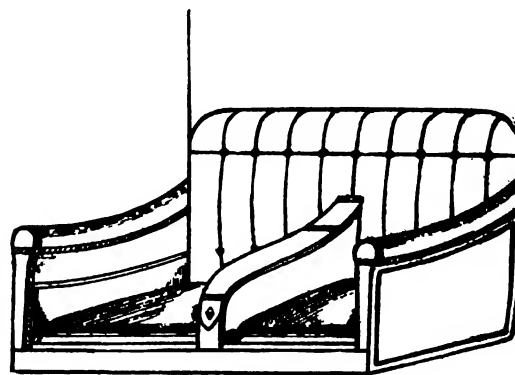
Crest panels,  $25 \times 4\frac{1}{2}$  in.

Quarter panels,  $32 \times 21$  in.

Back panels,  $33 \times 28$  in.

### AUTOMOBILE FRONT SEATS

The two examples of automobile front seats and the trimming, and seat divides are fairly interesting as samples of present trimming practice, and are given for that reason.





### CUT-UNDER BODIES

The body maker depends a great deal on the smith and his edge plates when making a cut-under body. At one time when three-seated wagonettes were very much used, both for private and public work, it was a common thing to see a body with a wheel-way or cut-under getting built, but of late years most bodies we see of this sort are on the four-wheeled dog cart principle. The old street wagonette was usually made with a round arch, and those for private use were almost always made angular, or what was usually termed a square arch. We will confine our few remarks to construction of the angular or square arch and deal with a body of the dogcart class.

There are three methods which are adopted in different centers. We will deal with the plan most generally adopted. It is best when starting a job of this sort to get it carefully drawn out full size on a board. This will save much trouble and often many mistakes. The bracket can be got out of one piece from a good piece of ash, or may be got out in two pieces and spliced at the corner. Then the balance of the framing can be got out and jointed together with the usual half lap joint, the pieces in the arch being about  $2\frac{1}{2} \times 1$  in., while the frame into which the floor is rabbeted requires to be at least  $1\frac{1}{2}$  in. thick and about  $2\frac{1}{2}$  in. wide, so that there is plenty of room for the edge plates, which run from near the point of the bracket right round the arch and along the framing at the back far enough to get at least three bolts. Then there is a flap running out from the edge plate along the crossbars. These crossbars are let into the frame at the bottom of the arch. These two crossbars require to be kept wide, so that when bolting on the flaps of the edge plates to them the bolts will not come out near the lower edge of the bar where it is much narrower.

### METAL BODIES

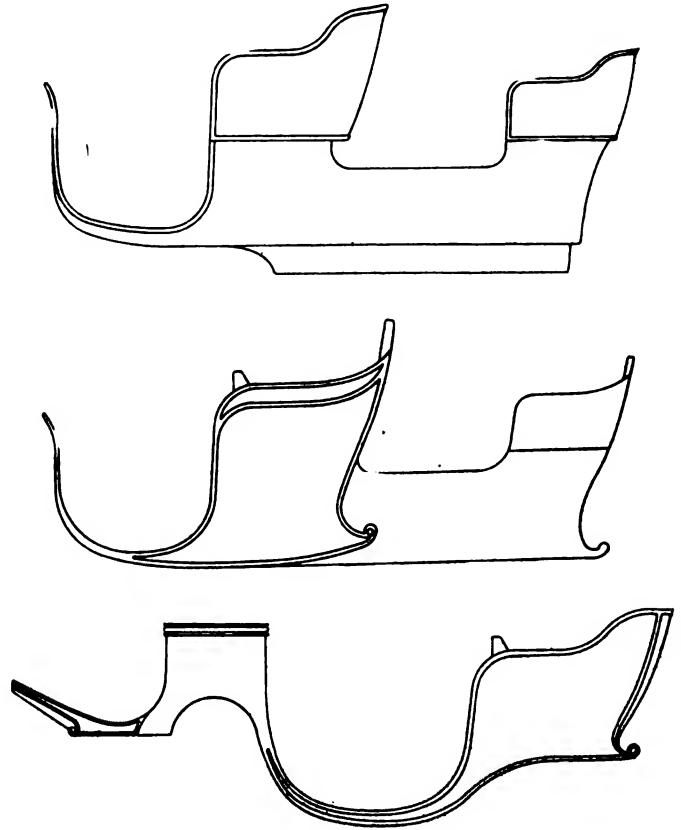
The observer who watches the trend of design in motor bodies can hardly help being struck by the fact that metal seems to be replacing wood in construction; and the thought arises as to whether it may not be possible some day to eliminate wood altogether. Where cars are manufactured in large quantities, if one fixed standard of body design were to be adopted, it is possible, by special tools to turn out bodies of cast and pressed sheet metal throughout, and such bodies, while having the advantage of lightness, also possess the merit of being quickly finished. It is possible to stove enamel them like the frames of bicycles. The numerous fillings and rubbings down necessary where wood is employed, before the final color coats and varnish are put on, are unnecessary. Such a system is quite possible and quite feasible today with cheap runabouts, but with cars of the highest class, such as limousines and landaulets—the former especially—built specially to order, it is not possible to standardize and use reproduction tools in construction, and little more can be done than to employ metal instead of wood for the paneling. In the lighter forms of open body quite a substantial step forward in that direction can be taken by the use of improved constructional methods, even where car bodies are hand built throughout, thereby very considerably lightening the body and, at the same time, increasing rather than diminishing its strength. And this saving in body weight is important, for it means that we can either enjoy greater stability and substantiality in our chassis without necessarily having a heavy car, or, if we are content with a light chassis, we are not obliged to overburden it with unnecessary weight. In either case the advantage to the user is considerable, particularly the saving both in tire wear and gasoline consumption.

### HERCULES BUGGY CO. INCREASES CAPITAL

The Hercules Buggy Co., Evansville, Ind., has increased its capital from \$1,000,000 to \$1,250,000.

### TYPES OF GERMAN BODIES

The bodies here shown are late examples from German shops, and may be of interest to body builders as suggestions. The automobile influence may be noted in the phaeton styles.



### HARDY BUGGY CO. TO MOVE SOUTH

The Hardy Buggy Company, whose plant was destroyed by fire at Paducah, Ky., a few months ago, has consolidated with a buggy company at Dallas, Texas, where the merged firms will manufacture buggies in the name of the Dallas Manufacturing Company. The Hardy company manufactured buggies at Paducah for seven years and did a big business in the south. W. T. Hardy, president, and B. M. Stephens, secretary-treasurer, are interested in the new company and will remove to Dallas. Robert H. Scott, vice-president of the Hardy Company, will remain in Paducah.

### ENTERTAINED DEALERS

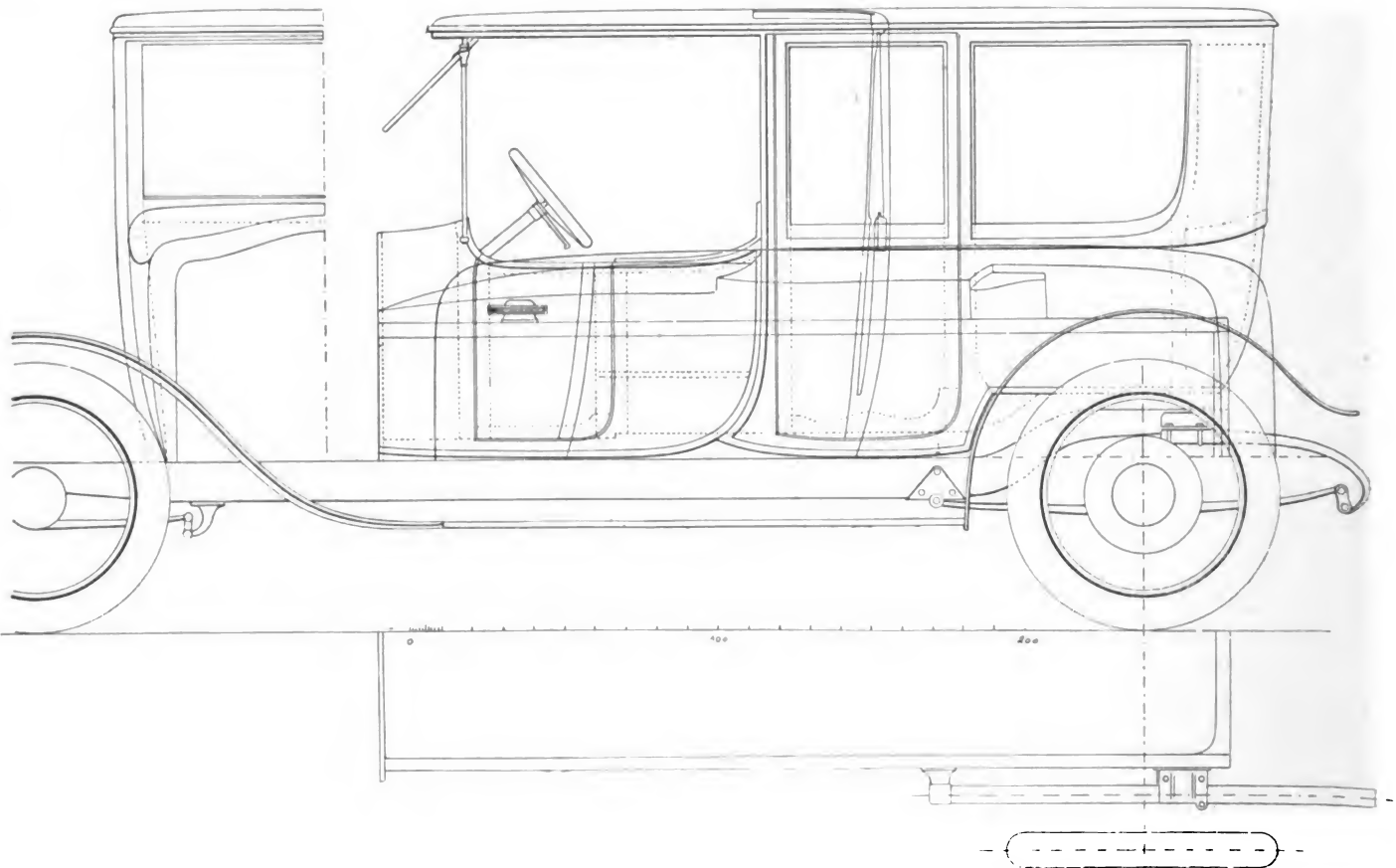
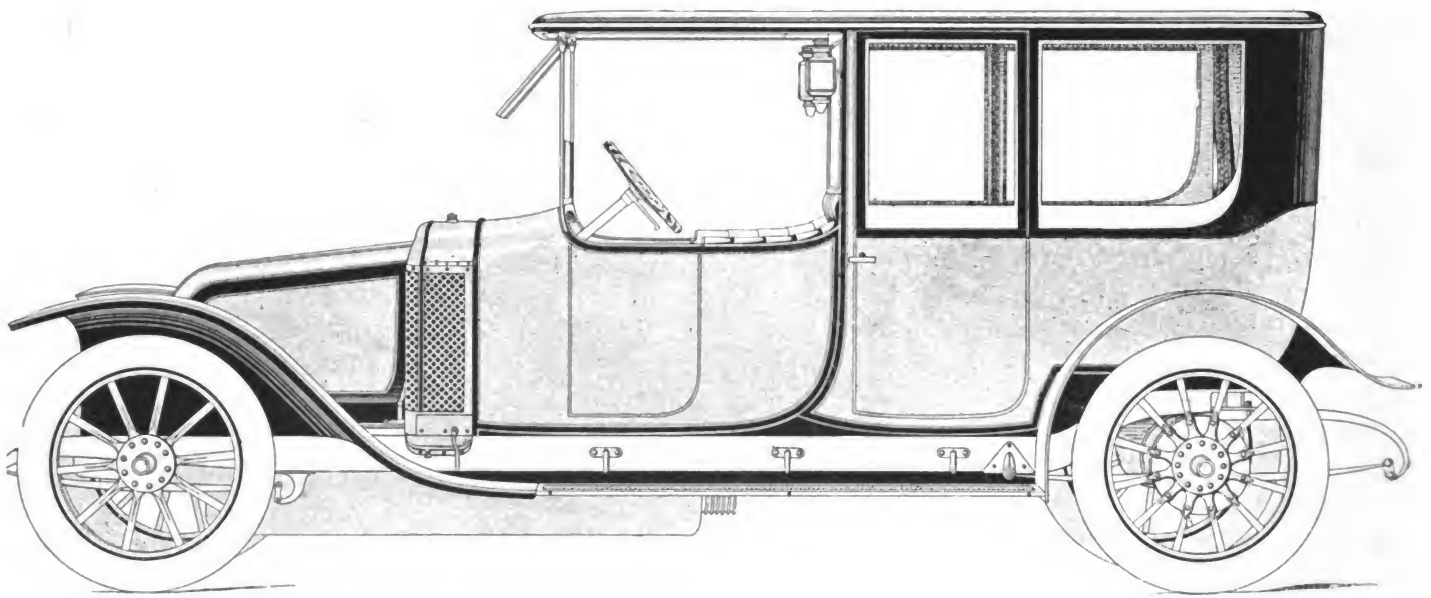
The Ahlbrand Carriage Company, Seymour, Ind., entertained a number of dealers of Indiana and Illinois with a banquet the evening of December 3. The guests were there to attend the buggy opening conducted by that company.

The tables for the banquet were arranged in one of the rooms at the factory. A. R. Woods, of Indianapolis, was selected as toastmaster and introduced the speakers who told of the merits of the vehicles manufactured by the local company.

### ROUND CORNER LIMOUSINE

(Illustration on preceding page)

Of the many styles of limousine body the round cornered body is most in vogue at present, especially for the smaller bodies. The round lines diminish for the eye the length and bigness of appearance. This practice allows of building a body light, but strong. The illustration shown is from the house of Kellner and appears in *Carrosserie Automobile*.

**ROUND CORNER LIMOUSINE**

## ENGINEER'S IDEA OF BODY FORM

The whole subject of motor body-work is one of great interest, says H. W. Prance, in *Cooper's Journal*, more especially in the present day when body development is making such strides, entirely overshadowing alterations in chassis design, which design may already be said to have reached such a state of standardization as to be of interest only so far as improvement in detail and minor arrangements is concerned.

More especially is the development of body form—that is to say, general form and not specific type—of very considerable interest, a development which has an underlying interest when considered from the right point of view.

Looking back one recalls the bodies of the early motor vehicles based on those of horse-drawn carriages, a design, however, which did not remain long in vogue, and with the coming of the side entrance body a type was arrived at more suitable for the purpose in view—that of carrying passengers at high rates of speed with comfort. Not much attention, however, was given to the matter beyond this view other than the not very successful attempts at improvements in appearance.

Subsequently curves of varying forms came to be introduced into body outlines, though such curves were for the most part purely of an ornamental nature and were introduced with no other than an aesthetic air, until latterly attention to minimum dust raising, and a more scientific viewing of the matter, combined with the utilitarian demand for ease of cleaning, led to the popularizing of the flush-sided form of body work. From the above causes attention also came to be given to scientific design of the general form aiming at minimum air disturbance—and thus minimum air resistance and minimum dust raising—hence from flat dashes and back panels curved dashes and panels became general, and “torpedo” bodies, high flush-sided bodies and the like sprang into immediate popularity.

But there is an underlying principle which should govern the development of all such curved forms. The curves should be correct and not introduced for appearance only.

In general form the outline of any fast-moving body should be based upon stream-line form, which is the ideal form which enables the air passing over the form to follow its lines throughout the motion with minimum disturbance; thus a cube moving rapidly through the air would leave a partial vacuum at its hindmost face, causing high resistance to the movement and eddying currents at the rear, while a solid of correct form—such, for instance, as a cigar-shaped solid moved rapidly through the air with its blunt end foremost—would enable the air to close in at its rear end and thus produce minimum air resistance and disturbance. This is a description of a somewhat rough nature, but it should serve to give an idea of the principle.

In various directions one sees attempts at forms more suitable than in the past for rapid motion through the air, but such development is practically useless unless the principle is carried out in extenso. Thus, a well-curved dash is of very little use if it is surmounted with a flat vertical wind screen directly causing maximum air disturbance, and curved dashes and curved side panels are practically useless when tailed off with flat back panels and projecting hoods.

The under surface of a car is also of great importance in the matter, especially as regards minimum dust raising, and improvements in body form which does not include attention to this detail is greatly nullified by the omission. Inspection of the 1913 models proves very disappointing in this respect, and furthermore, attention to the form of such details as wings, running boards, and the like still leaves much to be desired.

The dustless, minimum air-disturbing car is undoubtedly the car of the future, and although a start has been made in this direction, much yet remains to be done.

Undoubtedly the tendency in body development is to forms more adapted for a fast-moving vehicle, and even so far as appearance guides one there is something very much more reasonable looking in the present-day motor car bodies of all types than in their corresponding predecessors. The tendency is a right one, and the development as exemplified by the new models has already reached the stage when useful as well as ornamental curves and surfaces enter into body form.

### PLENTY OF TIMBER: LISTEN TO THE SECRETARY

“The situation which confronts the wood-using industries embraces conditions which are certain to work against the continuation of the present methods of production and organization. The influence of some of these is already felt to a degree that makes continued profits along present lines extremely uncertain,” is the statement soon to be issued by Secretary Wilson. The document deals with tendencies of forest utilization. Continuing, the bulletin says: “Production has outrun consumption until a condition of over-supply has been reached. This has prevailed without much change for four years.

“Side by side with the present overcutting exists an excess capacity of production, amounting in some of the principal timber states to from 50 to 100 per cent. This excess of capacity facilitates overproduction whenever conditions become in any way favorable.

“Efforts to safeguard the timber supply against the ill effects of fire, windfall, insects, and wasteful lumbering have been successful to a degree which insures a continuation of the timber supply for many years to come.

“The increased use of substitutes for wood has brought the demand for lumber almost, if not quite, to a standstill and promises still further to decrease the demand in the future.

“Prices for medium and low grades of lumber have remained practically at a standstill since 1907 and cannot advance to any extent without opening the door still wider to substitutes.

“It is obvious that future profits must come from increased utilization—from the manufacture of products which will absorb the material now wasted or utilized without profit—rather than from increased prices. Mere adjustment of total supply to demand will scarcely meet the situation. A method must be found to limit for each grade the quantity produced to that actually needed for consumption. With higher grades this will not be difficult; there exists no oversupply in these. Year by year the quantity required is about the same as that produced. It is with medium and low grades that the difficulty will come. It is in their case that oversupply prevails and competition rules.”

### HERE'S A CHANCE FROM ST. JOHN, N. B.

We have a vast quantity of extra good quality birch, which we think would be suitable for wagon hubs, and we wish to manufacture them in Canada.

This is to request you for full information regarding proper machinery to use.

Where such machinery is obtainable.

Cost of the same, and cost of manufacture.

Most profitable quantity to be manufactured.

Also the nature of wood required in making best hubs, and whether the wood is to be quartered or simply taken full size of logs in small growth, by boring out the heart.

We will be glad to give you any information we can at any time in return. CHARLES T. WHITE & SON, Limited.

# THE HUB ADVERTISING SERVICE

Edited By Dundas Henderson

Having decided on the amount of money you are going to spend on your advertising you have next to consider the people you must appeal to for orders. You must look upon those people as your audience, and you must understand that audience so thoroughly that you know just how to play on it well enough to entice money from its pockets.

To understand your audience is more important than the majority of advertisers think. I have seen otherwise shrewd business men advertise expensive automobiles in a locality where probably not one person—who was known and could be reached by phone or calling personally—in ten thousand would ever be interested. I have watched carriage builders try to sell wagons in sections where the majority of the inhabitants were of foreign extraction, by means of English literature. They forgot that although persons of foreign extraction may understand English, they think in the language of their parents. Arguments printed in their native language is the best way to convince people of that kind.

This all goes to show that there are many things besides ordinary human sense to contend with when you commence successful advertising. Not the least of those are educational conditions. Let me give you in this connection a little object lesson on the value of education in advertising.

The last United States census shows that there are about ten per cent. of the entire population unable to read or write. Another twenty-five per cent. is so badly taught that it is unable to read or write except with difficulty. Experts have shown that another forty per cent. is so apathetic that it rarely reads anything unless it has some very close interest in that special subject. That includes those people who read divorce cases, baseball news, etc., etc. This leaves us with about twenty-five per cent. of the population who can or will take an intelligent interest in advertising arguments when they are brought to their attention.

The lesson this teaches is that it needs something a little more forceful than a hammer to break into the intelligence of the aforesaid audience so that you can get them to buy your goods. You have to figure on startling methods indeed to arrest the attention and create interest in every member of your audience.

The best way for the carriage dealer to get acquainted with his audience before advertising is to commence a card index. Go to the stationery store and get a filing case and a few

thousand cards and a set of alphabetical guide cards. Get the cards as large as you can, because they will hold all the more information. You are now about to commence a "mailing list." Collect every name you can get of people who buy your class of goods. Ask your fellow merchants, get the voting list, the assessment list, the telephone directory and every other list you can beg, borrow or—well, acquire. It will surprise you to see what an amount of useful information there is lying around after you have been out after it for a few weeks. And it will surprise you, still more to find what a useful list you have got together at the same time. Put the christian or surname of the prospect on the card, his phone number, whether married or single, how many there are in the family, if any of them are to be married, where they now buy, what they buy, their credit rating, what rigs and carriages they now use, etc., etc. You cannot have too much information on your cards. And while some of the information may look frivolous it is good for future trade. For instance the notation that "Annie looks like hooking up with John Smith, of Hayton" may look like old woman's gossip on your card, but it may mean that a new buggy will shortly be in order. Don't be afraid, put all the information on the card. It is the little things that show how the wind blows and you will have to look out for those little things if you are to make a success of your business.

Not alone in the getting up of the card index must you busy yourself. You must keep it up. A card index is of little use unless it is continually overhauled and kept up-to-date. I think so much of a card index that I consider it worth while paying a clerk, either part or spare time, to look after it. The audience to whom you are going to sell your goods is like the soil of a garden you are going to sow with seed—it must be carefully prepared if you are to get the best results. The card index is your audience—and resembles the garden. In future issues I will show you how to make use of that card filing system to get good returns.

## WHAT TO AVOID—ADVERTISING SLIDES

There must be about 30,000 local merchants using advertising slides in moving picture theatres throughout the country. This method of advertising has become one of the most important in local publicity in the last few years. Recently I

### Yearly subscriber's order blank for advertising service

To The Hub,  
24 Murray Street,  
New York City

Date.....

I  
Herewith we enclose Fifteen Dollars Sixty Cents for Twenty-six special vehicle cuts now published and to be published in The Hub during the next twelve months. It is understood that I am we are to have sole rights of using the cuts in.....

This contract cannot be cancelled. The sending of the cuts shall mean that I have your consent to use the copyright of the illustrations locally in stipulated area, but not beyond.

Accepted for The Hub

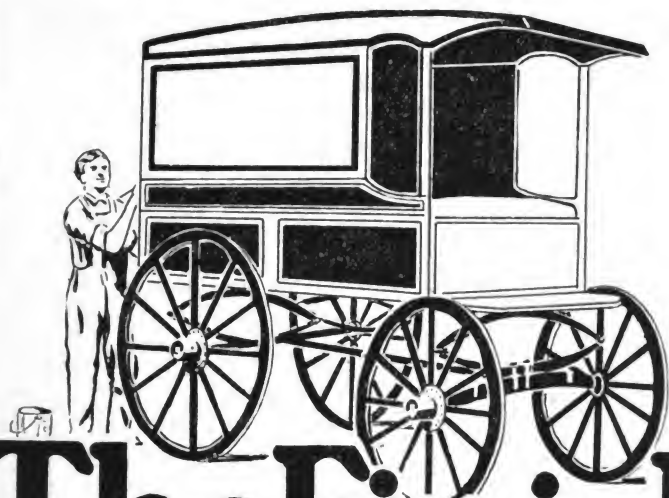
Firm Signature.....

by.....

By.....

Address.....

Note—If you are not now a subscriber to The Hub this contract must be accompanied by \$2 for a year's subscription.



# The Finish

of your wagon, buggy or carriage means a whole lot to its appearance and the look of your rig. It also means much in their lasting qualities.

A cheap finish gets dull and lifeless—it fails to protect the paint underneath which therefore is easily acted on by foul air—soon becomes shabby and gives your whole rig a cheap look.

**Come in and see the way WE finish.**



# Automobile Repairing

Honest repairing at an honest price has been our motto ever since we started. That is why we have the most select repairing business in this section.

You can absolutely depend on our work. It is done **always** to make you a satisfied customer—so that when next time you need our aid you will come back here.

**Try us to-day.**

## How to use THE HUB ready-made advertisements

The advertisements shown herewith are in one and two thirteen em columns width. The printer will tell you what that means. It allows you to use those ads in any newspaper, practically, in the country. The cuts at the top of the ads are supplied in both single and double column size. That is, although they may be shown in double column here they will also be supplied in single column. You can make those ads as long as you like. They are shown here in short lengths. It is usual to alter them to suit local conditions and to add lists of articles for sale or special descriptions of your goods. In every case you must put in your name and address.

If there are any questions in your mind regarding the use of those ads drop a letter to this journal and we will give you all the assistance you need. And don't forget that we also maintain a department for getting up all kinds of advertising literature and ideas at a low rate.



made a trip through the west and during the time I inspected many of those theatres. I was surprised to see the number of ads carried on the screens by the wagon and carriage dealers. Even the automobile dealers had their share.

I wonder if any of those men have ever given a thought to what they are trying to do by advertising on such a medium. The moving picture advertising screen is one of the best mediums in the world for advertising certain things of general sale if it is done in the right way, but for our trade it is simply a waste of money. There are not more than a dozen screens in the whole country—and those are situated in the large cities—where advertising of this kind would pay. Just consider for one moment who frequents a moving picture theatre. What percentage of the audience is interested in buying your goods? There are a dozen better and more direct ways to reach that few than an advertising screen. Don't waste your money, therefore, on advertising slides.

### U. S. MOTOR RECEIVERS OPPOSE BANKRUPTCY

The receivers for the United States Motor Co., against which a petition in bankruptcy was filed by three small creditors in Trenton, N. J., have taken the first step in an effort to have the bankruptcy matter dismissed in order that the equity proceedings in the United States District Court in New York City may proceed and that the property may be sold January 8, according to the order of the court.

The step taken by the attorneys for the creditors consisted in the filing of a demurrer to the petition when the matter came up in the Federal court in Trenton, Monday, December 2, the demurrer alleging that the petition is insufficient and not possessed of grounds for an adjudication in bankruptcy. The court set December 30 as the date for argument on the demurrer.

### NEW SECRETARY FOR DEERE & CO.

After a lapse of many months, Deere & Co. has chosen a secretary, T. F. Wharton having been chosen to succeed the late Schiller Hosford. His selection took place at the annual meeting of the company, November 26. With the exception of the choice for secretary, officials elected for the ensuing year are identical with the former officers.

Three new directors, C. A. Cahse, W. A. Van Brunt and W. R. Morgan, were added to the list, making a total of nineteen. This increased the number two over the directorate as it was prior to the death of Schiller Hosford.

### TURNED OUT ITS FIRST CAR

The Pittsburgh (Pa.) Gage & Supply Company, of that city, builders of the new Duquesne motor car, turned out its first finished product on November 30. It is a four cylinder, five passenger car which will sell for \$2,500. On January 1, the first six cylinder car will be finished. Since the automobile department was created some months ago, the officials have been experimenting with various types of engines, gears and minor parts of the machine. This has resulted in practically standardizing the Duquesne car. The work of turning out the finished machines will go rapidly forward to the full capacity of the plant.

### AUSTRALIAN READERS, ATTENTION!

We are desirous of ascertaining whether piano box buggies are being manufactured in countries other than the United States, to any extent. We are particularly interested just now in Australia and if you could give us the names of, say, five or six of them we would appreciate it very much and would also be glad to pay you for your trouble.

JOHNSON CARRIAGE COMPANY, Detroit, Mich.

### THE AMERICAN INVASION

The American Invasion, of which so much has been heard lately, will not be strikingly demonstrated at the Show, because of the fact that so few of the American cars can be exhibited—but this is only due to want of space. The effects of it may probably be seen in its tendency to keep prices down, but there is as yet no British car in the market of a type which competes on even ground with the American. By this we mean that the two types, as at present made, are not comparable. Whether the future will see a new British car produced on similar lines to the American type remains to be seen. If such a thing does happen it will very possibly be through the development of the "cycle car." This latter has lately been making considerable strides in public favor, and it unfortunate, perhaps, that, as in the case of the American cars, it cannot be exhibited for want of space, and particularly so because it is barred also—in its four-wheeled type—from exhibition at the Motor Cycle Show because it does not come within the definition which would admit it there.

In the British-made "cycle car" we have a powerful weapon with which to withstand the competition of the American car: because, although it may not be much less in price, its running and maintenance expenses are much lower.—Editorial in Cooper's Journal.

### PITTSBURGH AUTO SHOWS

The third annual show of the Pittsburgh Auto Show Association will be held in the Exposition buildings March 1 to 8, inclusive. Practically all the space has been allotted for pleasure cars and trucks and there is great demand for booths set aside for the display of accessories. The musical programs will be a feature of the show, bands and soloists of national reputation, as in the past, aiding in the amusement of visitors.

The annual show of the Automobile Dealers' Association will be held this year in the Auditorium, Larimer avenue and Broad street.

### CHANGE IN POSITIONS

The F. A. Ames Company has secured the services of Frank P. Shafer, of Conesus, N. Y., to cover the middle and western section of New York state for the Ames line of buggies. Mr. Shafer is well known to the vehicle trade. Arrangements also have been made with A. L. Kurtz, of Peoria, a salesman well known to the trade, for many years associated with Rattermann & Luth, of Cincinnati, to travel the middle and northern part of the state of Illinois.

### THE MEYER THREADS

The Meyer threads and silks are a trade standard, and to talk about their merits is a thing of no purpose because there is no one who will say no who has used the goods. Mr. Meyer is a specialist and the John C. Meyer & Co., at Lowell, Mass., is the agent for working out his ideas and ideals as to threads for carriage trimmers' use.

### RAIN ON GLASS SHIELDS

Frequent source of trouble to drivers of cars with fixed wind shields is the collection of rain on the glass in small globules, which are very detrimental to the vision, and in consequence, necessitate frequent stoppages for the purpose of cleaning the glass. An effective method of preventing this is to carry a bottle of kerosene and glycerine, mixed in equal quantities, and, on the commencement of rain, to rub a few drops of this over the surface of the screen. The rain will then spread over the glass in a thin sheet, enabling the drive to be continued in comfort.

# Trade News From Near and Far

## BUSINESS CHANGES

The Century Wagon Co., of Beaumont, Texas, has dissolved partnership.

J. G. Bachelor has purchased the Sissel stock of vehicles, etc., in Cuba, Kas.

C. C. Lane has engaged in the buggy and implement business in Clifton, Kas.

Freisen & Co. have purchased the business of Kroetching Bros., in Jansen, Neb.

T. N. Johnson has purchased the vehicle business of E. J. Peters, in Prescott, Ia.

E. D. Dann has purchased the stock of vehicles of O. V. White, in Van Meter, Ia.

S. C. Farrens has disposed of his buggy business in Colo, Ia., to Tichnor & Tichnor.

George Wale has purchased the stock of vehicles, etc., of P. O. Beem, in Eudora, Kas.

John Drake has disposed of his stock of vehicles in Winterset, Ia., to W. A. Hodson.

A. Marshall has sold out his stock of buggies, etc., in Lush-ton, Neb., to Omer & Greece.

Geo. C. Cole has disposed of his stock of buggies, etc., in Burlington, Mich., to C. Katz.

James Gorvin has purchased the stock of vehicles, etc., of B. W. Abbott, in Iowa City, Ia.

G. W. Beitzel has disposed of his stock of vehicles, etc., in Alta Vista, Kas., to G. Wirtman.

John Hogan has purchased the stock of vehicles, etc., of J. F. Thomas, in Powhattan, Kas.

C. A. Neville has purchased the vehicle and hardware business of E. Johnson, in Richland, Ia.

R. P. Cunningham has purchased the stock of vehicles, etc., of Nelson & Hoigh, in Atlantic, Ia.

Sams Brothers have succeeded Sams & Bassett in the vehicle and implement business in Motor, Ia.

P. R. Johnson has sold out his stock of vehicles, etc., in Holdredge, Neb., to J. A. Skallberg.

Rounseville & Doty have disposed of their vehicle business in Spiritwood, N. D., to Anton Freid.

The Monroe Body Co., of Detroit, Mich., has decreased its capital stock from \$500,000 to \$42,000.

B. H. Miles, of Minonk, Ill., has purchased the A. M. Cloud stock of vehicles, etc., in Maroa, Ill.

J. O. Nelson has disposed of his stock of vehicles, etc., in Greeley, Neb., to Ander & Mikkelsen.

Frank Wilcox, a pioneer in the buggy business in Cedar Falls, Ia., has sold out to W. F. Wood.

Packard & Lewis have succeeded to the carriage business of Lung & Packard, in Portland, Mich.

Wm. Barbee has purchased the stock of vehicles and implements of A. L. Skinner, in Ashland, Neb.

Vern Smith has purchased the vehicle and implement business of E. M. Perkins, in Medford, Okla.

Albert Lederer has disposed of his stock of vehicles, etc., in Dillon, Kas., to Sandow & Herrington.

Fred Raetz, Jr., has purchased the stock of buggies and hardware of Geo. Biegert, in Woodbine, Kas.

F. L. Greenfield is the new owner of the vehicle and implement business of Virgil Rout, in Alexander, Ia.

J. S. Pokorny has purchased a half interest in the Schuyler Motor Co., in Schuyler, Neb., from P. F. Tulley.

Howard & Wilbur McCrum have purchased the stock of vehicles of the late W. S. Paul, in Huntington, Ind.

Kuening, Seymour & Joyce have purchased the stock of carriages, etc., of Alexander & Son, in Syracuse, Neb.

Tamange & Fenwick have purchased the good will and business of the Gorman carriage shop, at Lenox, Mass., and William P. Gorman, who has managed the concern, has taken a position with the new firm.

William J. Kerr, the veteran carriage maker of Warren, O., has retired from business, as the property, known as the Eagle Carriage Works, has been sold to Zipf & Scriber, who will continue the business at the same stand. Mr. Kerr has been identified with the business life of Warren for over a half century.

## IMPROVEMENTS AND EXTENSIONS

The DeKalb (Ill.) Wagon Company is erecting a warehouse. H. H. Phillips is enlarging the capacity of his vehicle repository in Hartford, S. D.

Wm. Bodenner, of Fairbury, Neb., is building a new vehicle and implement warehouse.

The Parker Buggy Co. is about to rebuild its plant in Suffolk, Va., which was but recently burned.

A new addition is being built to Fred Babler's blacksmith and wagon making shop, at Wausau, Wis.

George Steeg will soon move his wagon shop into the building he recently purchased, at Waverly, Pa.

The Fremont Carriage Co., of Fremont, Neb., is adding a line of automobiles to its carriage business.

Frederick M. Boehlk is about to erect a large wagon shop in St. Louis, Mo., at 318-320 S. Fifteenth street.

The Henderson Motor Car Co. is now occupying the recently completed addition to its factory in Indianapolis, Ind.

The Wyant-Dickinson-Heath Co. is about to erect a two-story vehicle and implement building in Shellsburg, Ia.

The Ford Automobile Company will erect a new structure at South Broadway and Kentucky streets, Denver, Colo. The building will cost \$160,000 and it will give employment to 200 men.

The Williams Wagon Works has purchased land at Macon, Ga., on the Houston road, and will erect a large plant there. The site is 100 x 300 feet. The building will be almost entirely of concrete, several stories high.

Arthur Marshall is arranging to erect a new vehicle warehouse in McCool, Neb., to replace the structure recently burned.

M. Hirsch has but recently occupied his new vehicle and hardware store in Bloomington, Neb.

Geo. Demars, carriage and wagon builder, Worcester, Mass., is erecting a four-story concrete building, exclusive of basement, 66 x 133 feet, which he will occupy in the new year. The building will cost in the vicinity of \$30,000.

The Universal Wheel Company, Fort Wayne, Ind., which manufactures punctureless auto wheels, has let the contract for the preparation of the plans for its big plant. It is expected that the building will cost in the neighborhood of \$150,000.

S. L. Dodds, proprietor of the Hickman (Ky.) Wagon Company, has a large force at work on two new buildings adjacent to the factory. One is to be his office and the other a large warehouse. Mr. Dodds sold the ground on which his present office, warehouse and paint shop are situated, and he is to give possession at once.

Owen Bros., Lima, O., have purchased a tract of land and will erect at once a \$25,000 building, to be used by them as a factory for the manufacture of carriages and for the repair

of carriages and motor cars. The building will be either two or three stories constructed of brick. The structure will give them a floor space of about 25,000 feet.

George E. Daniels, vice-president and general manager of the Oakland Motor Car Company, Grand Rapids, Mich., announces that the plans for next season call for the building of 11,500 Oakland cars, and that this will necessitate a number of factory additions. These will be started at once. A total of 300,000 square feet of space will be added.

The Smith Manufacturing Company, La Crosse, Wis., makers of wagons and bob sleds, has awarded a contract for a large addition to its plant.

### BUSINESS TROUBLES

A. P. A. Nelson & Co., Cincinnati, O., manufacturers of leather goods for automobiles, have placed their affairs in a bankruptcy court. Assets claimed to be \$13,000; liabilities, \$21,000.

Ralph Goldsworthy, doing business as the Ohio Auto Carriage Company, Cincinnati, O., filed bankruptcy schedules in federal court, November 21, showing liabilities of \$12,348 and assets of \$9,039.

Judge Mayer has confirmed a composition of Jacob Schenkel, carriage manufacturer of 73 Orchard street, N. Y. City, with creditors at 30 cents on the dollar payable 5 cents cash and 25 cents in five notes at 6, 12, 24, and 30 months. Liabilities were \$20,827.

R. L. Douglass, of Puryear, Tenn., eight miles north of Park, has made an assignment, naming as trustee J. H. Douglass. Mr. Douglass conducted a big buggy and harness store and undertaking establishment, his liabilities running between \$9,000 and \$10,000. Assets are about \$7,000.

William Wetherhold, trading as Wetherhold Brothers, Reading, Pa., carriage builders, was adjudged a voluntary bankrupt in the United States District Court, Philadelphia. According to the schedules referred to Referee Samuel E. Bertolet, there are liabilities of \$9,595.55 and assets of \$2,409.85.

The Federal Court has appointed John C. Richter receiver for the Laporte (Ind.) Carriage Company, on petition of the Lackawanna Leather Company, Chicago; the Hackettstown National Bank, Hackettstown, N. Y., and M. H. Bates, Chicago, who have claims amounting to \$2,289.35. They ask that the company be declared bankrupt.

Koepple & McIntosh have sued the National Wagonstock Co., of Little Rock, Ark., for \$139,500 alleged damage for breach of contract. The plaintiff claims the defendants contracted for 11,500,000 feet of lumber, which they rejected. The case was before the court some time ago and the contract was affirmed by the Supreme Court of Arkansas.

Judge Smith on November 4 allowed the final account of Receiver F. G. Jacobs, of the Pontiac (Mich.) Spring & Wagon Works and provided for the distribution of the cash on hand to the stockholders. The report of the receiver showed the debits of the company were \$2,101.13 and the credits \$923.86, leaving a balance on hand of \$1,177.27 to be divided among the stockholders pro rata.

The carriage factory of Zimmermann & Sons, Waupun, Wis., has been closed pending the settlement of the affairs of the auto company, of Streator, Ill., for which the firm made bodies. The Zimmermanns have some \$3,000 tied up in auto bodies on hand and the failure of the Streator company has caused them considerable financial embarrassment. Whether or not they will resume work is uncertain. It is one of the oldest manufacturing plants in the city.

Alleging mismanagement of the affairs of the company and charging that he made unauthorized loans to himself, the Taylor Implement and Vehicle Company, Memphis, Tenn., has filed suit in chancery court against Ford N. Taylor. Judgment for \$14,185 is asked. Taylor was formerly secretary, treasurer and general manager of the company, but the bill recites, resigned at a meeting of the directors in St. Louis recently.

It is stated an audit of the books shows a loss of \$14,185. It is stated in the bill that Taylor is not satisfied with the audit, and proposes to employ his own accountants to examine the books. An injunction restraining him from taking such action is asked.

### NEW FIRMS AND INCORPORATIONS

Chas. Sherritt is about to erect a wagon works in Miami, Fla.

The Williams Mfg. Co. is about to build a wagon factory in Macon, Ga.

The Elliott Implement & Vehicle Co. is engaging in business in Houston, Mo.

O. A. Rasmissen has opened a new stock of vehicles, etc., in McBrides, Mich.

George Burghdors has engaged in the vehicle and hardware business in Rodney, Mich.

The Boone (Ia.) Carriage Works has been organized and put up a new plant which is now ready for business.

The Evansville (Ind.) Carriage Wood-Stock Company, capital \$20,000, has been incorporated. Directors, Guild C. Foster, Charles Hambly and Charles W. Wittenbraker.

### FIRES

The stock of vehicles of E. A. Ayers, in Fairbury, Neb., has been destroyed by fire.

The stock of buggies, etc., of C. P. Meredith, in Atlantic, Ia., has been destroyed by fire.

The Sarnia (Ontario) Hub and Spoke factory, owned by the estate of the late J. S. Loughhead, was totally destroyed by a fire, November 26. The damage was about \$40,000, and 25 men were thrown out of employment.

John A. Horn, aged 72, an employe of the Buckeye Carriage Body Company, was burned to death in a fire which destroyed the plant of the company in Bellefontaine, O., on December 5. A number of the other 50 workers in the plant were slightly injured in escaping from the burning building, which was a three-story frame structure. The place was a complete ruin in half an hour after the flames were discovered. The loss is about \$25,000.

A loss of about \$15,000 was suffered by the Pioneer Automobile Company, 5866-5888 Baum street, Pittsburgh, Pa., on December 3, this being the second fire for that company in less than a month. The other conflagration occurred on November 15, when the loss was about \$50,000. The Eddie Bald Motor Car Company and the Iron City Tire Company, whose plants are located on either side of the burned building, also suffered losses, principally caused by smoke and water.

### RATTERMANN & LUTH DISAGREE

Theodore Luth filed suit in the common pleas court recently to force his partner, Henry Rattermann, in the carriage manufacturing firm of Rattermann & Luth, to buy him out. Under the partnership agreement a dissolution could be forced by either partner prior to November 1 of any year, by giving notice to the other partner to buy him out or sell. On September 16 Luth claims Rattermann gave him notice under the agreement, giving him until noon October 12 to exercise his right to buy Rattermann's share, and they agreed upon a value of \$50,853.47 for the business and \$30,000 for the real estate. The agreement also gave Rattermann until noon October 23 to exercise his option to buy. On October 18 Luth notified Rattermann that he would sell, he claims, and delivered a deed to him on October 23. Now, he alleges, Rattermann refuses to sign the notes provided in the terms for such dissolution, and Luth's suit demands judgment against him for \$40,426.73, or one-half of the value of the business. The partnership was entered into January 13, 1894.—Cincinnati Enquirer.

# Recently Granted Vehicle Patents

Of Interest to the Carriage and Automobile Trade

- 1,024,305—**Vehicle Curtain.** Clarence S. Applas, Moline, Ill.  
 1,024,469—**Truck.** Bert A. Ballinger, Los Angeles, Cal.  
 1,024,431—**Vehicle Tire.** Theodore H. Banks, San Antonio, Texas.  
 1,023,800—**Buggy-top Support.** Joseph Bennett, Dayton, O.  
 1,023,804—**Driving and Steering Mechanism for Power-operated Vehicles.** Iram W. Bould, Pittsburgh, Pa.  
 1,024,394—**Automobile Starting Device.** Edward R. Brodton, assignor of one-half to J. A. Gartland, Boston, Mass., and one-fourth to R. M. Stephens, Hackettstown, N. J.  
 1,023,810—**Automobile Steering Guide.** Claude Bugg, Clinton, Ky.  
 1,024,182—**Steering Mechanism.** Wm. E. Christopher, Thomas, assignor of one-half to J. R. Wilkerson, Ensley, Ala.  
 1,024,121—**Power Transmission Unit for Automobiles.** Chas. E. Davis, assignor to Warner Gear Company, Muncie, Ind.  
 1,024,189—**Rubber Tire for Vehicles.** Alexander Dow, New York, N. Y.  
 1,024,191—**Spring Wheel.** Stillman B. Edwards, Villisca, Ia.  
 1,024,447—**Starting Device for Internal Combustion Engines.** Edward A. Halbleib, assignor to Northeast Electric Company, Rochester, N. Y.  
 1,024,336—**Resilient Tire.** Noah Harris, Indianapolis, Ind.  
 1,024,132—**Casing for Universal Joints for Automobiles.** James G. Heaslet, Detroit, assignor of one-half to W. E. Flanders, Pontiac, Mich.  
 1,023,848—**Combined Tank Bracket and Step for Motor Vehicles.** Russell Huff, assignor, by mesne assignments, to Packard Motor Car Company, Detroit, Mich.  
 1,024,338—**Locking Device for Dump Carts.** Greene Huling, Harpton, Conn.  
 1,024,077—**Starting Device for Internal Combustion Engines.** Charles F. Jenkins, Washington, D. C.  
 1,024,078—**Tire-repair Device.** Charles F. Jenkins, Washington, D. C.  
 1,023,944—**Starting Mechanism.** John S. Laufman, Western, Neb.  
 1,023,859—**Vehicle Spring.** Wm. S. Lee, assignor, by mesne assignments, to Briggs-Detroit Company, Detroit, Mich.  
 1,024,210—**Lamp or Illuminator for Autos and Other Vehicles.** Wm. K. Lenhart, Philadelphia, Pa., assignor to Lenhart Mfg. Co., Inc.  
 1,024,090—**Elastic Tire.** Thomas B., A. G., and G. P. Marchant, London, Eng.  
 1,024,091—**Spring Wheel.** Noah R. Martin and C. E. Roby, Columbus, Ohio.  
 1,024,270—**Wheel Hub.** John J. McGuire, New York, N. Y.  
 1,024,411—**Headlight for Automobiles.** James B. McKiel, Marshall, Texas.  
 1,024,139—**Crank Mechanism.** Edwin H. Miller, assignor of one-half to J. W. Melville, Los Angeles, Cal.  
 1,023,865—**Vehicle Spring.** Allison Moffit, Galetton, Pa.  
 1,023,868—**Pneumatic Cushion for Vehicles.** Abraham J. Oling, assignor of one-third to I. Kommers, Jr., Chicago, Ill.  
 1,024,099—**Combined Elastic Clutch and Engine Starter.** Edgar U. G. Reagan, assignor to Reagan Clutch Company, San Antonio, Texas.  
 1,024,103—**Starting Device for Explosion Engines.** Charles C. Roth, Indianapolis, Ind.  
 1,024,458—**Tire Protector.** Joseph Savoie, Central Falls, R. I.  
 1,024,154—**Vehicle Wheel.** Robert T. Smith, Warrington, Eng.  
 1,024,037—**Whiffletree Bearing.** Louis H. Soens, Mancos, Col.  
 1,023,971—**Automobile Fender.** Benjamin F. Stannard and A. Aginskee, assignors to National Automatic Vehicle Fender Company, Omaha, Neb.  
 1,024,042—**Elastic Tire.** Alfred W. Torkington, Purley, assignor to Torkington Tires (Patent Syndicate), Limited, London, Eng.  
 1,023,901—**Wind Shield.** James Webster, assignor to Chicago Coach & Carriage Co., Chicago, Ill.  
 1,024,382—**Tire for Automobiles.** Oscar H. Weckesser, Ros Township, Allegheny County, Pa.  
 1,023,903—**Self-starting Device for Internal Combustion Engines.** Louis T. Weiss, Jr., New York, N. Y.  
 1,024,241—**Cranking Device for Internal Combustion Engines.** Mason G. Worth, New York, N. Y.  
 1,025,045—**Swingletree.** Lambert E. Barnes, Greenwood, Miss.  
 1,026,675—**Combined Coupling and Steering Mechanism.** Tracy V. Buckwalter, Altoona, assignor of one-half to A. S. Vogt, Philadelphia, Pa.  
 1,025,051—**Spring Wheel.** Charles P. Garrick, Flint, Mich.  
 1,025,080—**Spring Wheel.** Charles Coughlin, Jersey City, N. J.  
 1,025,209—**Elastic Vehicle Spring.** Frank L. Sears, Oakland, Cal.  
 1,025,215—**Universal Jointed Automobile Steering Rod.** Jacob H. Stull, Fremont, Ohio.  
 1,025,216—**Lever Control for Motor Vehicles.** Alfred T. Sturt, assignor to Buick Motor Co., Flint, Mich.  
 1,025,432—**Steering Mechanism.** Albert Theerman, Dike, Ia.  
 1,025,433—**Spring Wheel.** Carl C. Thomas, Madison, Wis.  
 1,025,496—**Starting Mechanism for Automobile Engines.** Edgar L. Weaver and E. C. Kimmel, Saltville, Pa.  
 1,025,601—**Grain Guard for Wagons.** Oscar W. Wiggins, Pomona, Kas.  
 1,025,602—**Dirigible Automobile Lamp.** Thomas G. Wilbraham, Alloway, N. J.  
 1,025,555—**Wheel.** Ora W. Williams, assignor of one-half to W. H. Gardner, Minneapolis, Minn.  
 1,026,146—**Steering Mechanism for Vehicles.** Edward W. Bliss, Rochester, N. Y.  
 1,026,201—**Spring Tire.** George Burson, Winamac, Ind.  
 1,026,496—**Vehicle Spring.** Arthur Collette, Brockton, Mass.  
 1,026,023—**Sleigh.** Magdalena Diener and C. F. Urban, Milwaukee, Wis.  
 1,026,572—**Spoke Socket.** Patrick S. Duffy, Barre, Vt.  
 1,026,499—**Jack for Tightening Antiskid Chains.** Wm. F. Edgington, assignor to A. Murray, Springfield, O.  
 1,026,505—**Resilient Wheel.** Adam F. Glaser, Jersey City, and J. Olsen, Whippany, assignors of one-third to G. W. Crane, Rahway, N. J.  
 1,026,312—**Adjustable Steering Mechanism.** Paul Hansmann, assignor to Hansmann Mfg. Co., Long Prairie, Minn.  
 1,025,979—**Wagon End-gate.** Wm. E. Hinze, Hamburg, Ia.  
 1,026,316—**Spare Tire Case.** Charles F. Hopewell, Newton, Mass.  
 1,026,038—**Tire.** George S. Howe, Richmond, Va.  
 1,026,168—**Safety Attachment for Automobiles.** Thomas B. Jeffery, deceased, Kenosha, Wis., K. E., C. T. and H. W. Jeffery, executors.  
 1,025,981—**Spring Wheel.** Frederick H. John, Middleport, Pa.  
 1,026,098—**Spring Vehicle.** Richard Liebau, Watervliet, N. Y.  
 1,026,522—**Whiffletree.** T. Martin, Missouri City, Texas.  
 1,026,102—**Vehicle Step.** Samuel W. Mather, Cleveland, O.  
 1,026,358—**Detachable Limousine Top for Automobiles.** Oscar N. McCallister, Mount Vernon, Ind.  
 1,026,220—**Vehicle Wheel and Axle.** James E. Murray, McKeesport, Pa.  
 1,026,115—**Motorcycle Rear Seat Spring.** Frank E. Palin and R. A. Palin, San Mateo, Cal.  
 1,026,365—**Wind Shield Holder.** Frank P. Pflieger, assignor to The English & Mersick Co., New Haven, Conn.  
 1,026,122—**Steering Wheel.** Joseph L. Prather, Fresno, Cal.  
 1,026,368—**Vehicle Top.** Alexander Ritchie, Detroit, Mich.  
 1,026,224—**Antiskidding Device for Vehicles.** Marshall J. Rohr, assignor of one-fourth to J. W. Rogley, Washington, D. C.  
 1,026,408—**Wind Shield.** Frederick Schimper, Union, assignor of one-half to A. H. Koeller, Ridgefield Park, N. J.  
 1,026,465—**Refuse Wagon.** Leopold F. Scholz, New York, N. Y.  
 1,026,468—**Cushion Tire for Vehicle Wheels.** Michel J. Selzer, assignor to The American Tire & Rubber Co., Akron, Ohio.  
 1,026,370—**Vehicle Wheel.** Herbert J. Sewell, Detroit, Mich.  
 1,026,613—**Manufacture of Wheels.** Robert T. Smith, Jr., Warrington, Eng.  
 1,026,130—**Draft Equalizer.** Francis E. Spencer, Dover, assignor of one-half to S. Gilchrist, Kiel, Okla.  
 1,026,374—**Starting Device for Explosive Engines.** Ernest V. Swern, assignor of one-fourth to J. M. East, Denver, Colo.  
 1,026,375—**Driving Gear for Vehicles.** Judson R. Tibbles, Macedonia, Iowa.  
 1,026,534—**Auto Cranking Device.** Fletcher H. Waddill and R. D. Fonda, Dexter, N. M.  
 1,026,189—**Locking Device for Automobile Cranks.** Charles A. Wheeler, assignor of one-half to The Smith & Egge Mfg. Co., Bridgeport, Conn.  
 1,024,934—**Mudguard Fastener.** Allen S. Hall, Kokomo, Ind.

1,024,976—**Resilient Tire for Vehicle Wheels.** Alfred A. Curry, Bridgeport, Conn.  
 1,024,977—**Spring Wheel.** Elvin East, Sheffield, Ala.  
 1,024,505—**Steering Gear for Vehicles.** James M. Gilstrap, Fresno, Cal.  
 1,024,567—**Automobile Front.** Albert E. Gooderham, Toronto, Ont., Canada.  
 1,024,634—**Convertible Automobile.** Albert Klell, West Park, assignor of one-half to H. Baracs, Cleveland, Ohio.  
 1,024,636—**Side-dump Auto Truck.** George W. Lally, Boston, Mass.  
 1,024,792—**Runner Attachment for Vehicles.** John F. Leith, Cleveland, Ohio.  
 1,025,070—**Speedometer.** Robert B. A. Lemaignon, Rouen, France.  
 1,024,639—**Scale Attachment for Vehicles.** John H. Levillain, Loring, La.  
 1,025,072—**Spring-cushioned Tire for Vehicle Wheels.** Wm. W. Lower, Tyrone, Pa.  
 1,024,694—**Vehicle Brake.** Matthew C. Muir, Philadelphia, Pa.  
 1,024,746—**Demountable Wheel Rim.** Harry H. Replogle, Montreal, Quebec, Canada.  
 1,024,652—**Motor Road Vehicle.** Frederick H. Royce, Derby, England.  
 1,025,024—**End-gate for Wagons.** Charles Skidmore, Homer, Neb.  
 1,024,703—**Exhaust Muffler.** Augustus G. Snyder, Utica, N. Y.  
 1,024,658—**Folding Storm Front for Automobiles.** James E. Stevenson, Puyallup, Wash.  
 1,024,712—**Engine Starter.** Wm. H. Williams, Statesboro, Ga.  
 1,024,959—**Dumping Cart.** Lesser Wolf, New York, assignor of one-half to H. Blankfort, Brooklyn, N. Y.  
 1,024,760—**Spring Swingletree.** Gettis W. Yates, assignor of one-half to F. B. Wilder, Tampa, Fla.  
 1,025,604—**Steering Mechanism.** Gustaf A. Anderson, assignor to The Geiser Mfg. Co., Waynesboro, Pa.  
 1,025,359—**Dump Wagon.** Wm. Atkins, Auburn, N. Y.  
 1,025,233—**Spring for Vehicles.** Herbert Austin, Barnt Green, near Birmingham, Eng.  
 1,025,854—**Automobile Tire.** Leon C. Beaumont, Hudson Falls, N. Y.  
 1,025,607—**Motor Vehicle Speed Alarm.** Rudolph Berliner, D.D., Swem, and H. F. Moore, Chicago, Ill.  
 1,025,734—**Vehicle Tire.** John F. Bosquett, Jersey City, N. J.  
 1,025,456—**Amusement Device for Exhibiting Automobiles.** Harry L. Curran, assignor of one-half to E. F. Kellogg and one-half to H. L. Gillespie, New York, N. Y.  
 1,025,900—**Wheel.** Isaiah M. Depew, Palma Sola, Fla.  
 1,025,790—**Wheel.** Enan M. Deal, assignor to E. A. Schneider, Philadelphia, Pa.  
 1,025,610—**Pneumatic Tire for Vehicle Wheels.** Georges Desson, Paris, France.  
 1,025,387—**Automobile Controller.** Otto Euler, Jackson, Mich.  
 1,025,388—**Shock Absorber for Vehicles.** Highland T. Finnell and E. Schernikow, New York, N. Y.  
 1,025,804—**Automobile Transmission Mechanism.** Orion B. Hitchcock, and A. M. and F. M. Berggren, Morganville, Kas.  
 1,025,187—**Motor Vehicle.** Russell Huff, assignor, by mesne assignments, to Packard Motor Car Co., Detroit, Mich.  
 1,025,188—**Gearing for Motor Vehicles.** Wm. D. Hughes, Atlanta, Ga.  
 1,025,400—**Resilient Antiskidding Wheel.** Henry G. Hugon, Calais, France.  
 1,025,810—**Internal Combustion Engine Starter.** Charles A. Kinney, Seneca, Pa.  
 1,025,473—**Resilient Wheel.** Francis H. Lacey, Richland, Mo.  
 1,025,762—**Auto or Gas Engine Starter and Indicator.** George E. Ocain, Oak Park, Ill.  
 1,025,295—**Starting Mechanism for Internal Combustion Engines.** Oscar P. Ostergren, Brooklyn, N. Y., assignor of one-half to H. Reis and one-half to S. S. Marley, Wilmington, Del.  
 1,025,159—**Chain Guard for Vehicle Wheels.** Conness T. Raymond, assignor of one-half to J. W. Pax, Chicago, Ill.  
 1,025,483—**Vehicle Wheel.** Thomas Rhodus, Chicago, Ill.  
 1,025,591—**Vehicle Wheel.** Charles B. Ross, Greenleaf, Kas.  
 1,026,291—**Vehicle Wheel.** Alfred R. Wylie and J. G. Wright, Big Spring, Texas.

Copies of above patents may be obtained for 15 cents each by addressing John A. Saul, solicitor of patents, Fendall Bldg., Washington, D. C.

## CHALMERS MOTOR CO. CONTINUES TO SPREAD

With two new buildings, aggregating 75,000 square feet of floor space, nearing completion, the Chalmers Motor Company now announces the erection of a third structure, which will be used for general manufacturing purposes and will have 24,000 square feet of floor space.

## RECENTLY EXPIRED PATENTS OF INTEREST TO THE VEHICLE INDUSTRY

547,789—**Felly Expander.** Charles Hoffman, Spokane, Wash.  
 547,811—**Tire Holder.** Albert M. Scott and John H. Crickenberger, Nokomis, Ill.  
 547,999—**Wagon Seat.** William Leech, Hamden, Conn.  
 548,015—**Fifth Wheel.** Ezra B. Smith, Cincinnati, Ohio.  
 548,047—**Tire for Vehicle Wheels.** James M. Gilmore, New York, N. Y.  
 548,117—**Vehicle Tire.** Charles E. Duryea, Peoria, Ill.  
 548,124—**Thill Support.** George Harden and John M. Dye, Wabash, Ind.

### Patents Expired October 22, 1912

548,221—**Rim Joint for Vehicle Wheels.** Louis Rastetter, Ft. Wayne, Ind.  
 548,380—**Whiffletree.** Stephen T. Moffitt, Moffitt's Mills, N. C.  
 548,397—**Wagon Body.** William O. Shadbolt, Brooklyn, N. Y.  
 548,417—**Draft Attachment for Vehicles.** Thomas S. Bailey, Sandy Lake, Pa.  
 548,542—**Vehicle Brake.** Ernest Hecht, Paul Rasche, and Berthold Krug, Tempelhof, Germany.  
 548,619—**Tire for Wheels.** Ferdinand Masset and Eduard Gartig, Chicago, Ill.

### Patents Expired October 29, 1912

548,633—**Tire Tightener.** Christen Durken, Omaha, Neb.  
 548,674—**Pneumatic Tire for Vehicles.** Alexander Straus, New York, N. Y.  
 548,675—**Pneumatic Tire.** Alexander Straus, New York, N. Y.  
 548,696—**Carriage Wrench.** James W. Carver, Granville, N. Y.  
 548,745—**Pneumatic Tire.** Robert S. Crawford, Hagerstown, Md.  
 548,771—**Wheel Hub.** Rudolph C. Bookser, Buffalo, N. Y.  
 548,874—**Whiffletree Hook.** Martin L. Hayward, North Reading, Mass.

548,885—**Axle and Skein Support for Wagons.** Conrad Miller, Leadville, Col.  
 548,900—**Pneumatic Tire.** Martin L. Warson and Edward F. Pickett, Buffalo, N. Y.  
 548,926—**Wheel Tire.** Lucius J. Phelps, Boston, Mass.  
 548,954—**Unloading Attachment for Coal Wagons.** Samuel H. Casselberry and James B. Rapp, Collegeville, Pa.  
 548,992—**Wagon Brake.** Benjamin F. Jackson and Marshal L. Hughes, Sutton, W. Va.  
 549,000—**Fifth Wheel.** George W. Mauk, Williamsburg, Pa.  
 549,016—**Cushioned Vehicle Tire.** Charles A. Pratt, Clinton, Mass.

549,030—**Vehicle Spring.** Willie N. Snow, Eaton, N. H.  
 549,059—**Pneumatic Tire.** Edward A. Cochran, Brooklyn, N. Y.

### Patents Expired November 5, 1912

549,173—**Pneumatic Tire.** Hugh L. Warner, Covington, Ky.  
 549,370—**Sand Collar for Wagon Axles.** Targe G. Mandt, Stoughton, Wis.  
 549,408—**Vehicle Wheel.** George R. Van Schoick, Albion, Mich.

### Patents Expired November 12, 1912

549,533—**Automatic Wagon Brake.** Joel Rich, Juneau, Wis.  
 549,581—**Rim and Tire for Wheels.** Frederick D. Owen, Washington, D. C.  
 549,646—**Adjustable Boxing for Vehicle Wheels.** William J. Lapworth, Beatrice, Neb.  
 549,732—**Fifth Wheel for Buggies.** Christian S. Lehman, Lawn, Pa.  
 549,863—**Thill for Vehicles.** John Wallace, Houghton, and Benry H. Mergan, Jacobsville, Mich.

### Patents Expired November 19, 1912

549,971—**Holdback for Wagon Poles.** Targe G. Mandt, Stoughton, Wis.  
 550,067—**Vehicle Brake.** Jorgen Christensen, San Francisco, Cal.  
 550,155—**Thill Coupling.** Peter Bold, Woodbourne, N. Y.

### Patents Expired November 26, 1912

550,272—**Thill Coupling.** Rudolph G. Jahnke, Cincinnati, O.  
 550,305—**Thill Coupling.** Frank W. Warner, Angelica, N. Y.  
 550,414—**Tire for Vehicle Wheels.** George H. Mackay, Salem, N. H.  
 550,454—**Vehicle Spring.** Warren R. Markham, Henrietta, N. Y.  
 550,455—**Wagon Running Gear.** George W. McClure, Springville, N. Y.  
 550,489—**Vehicle Running Gear.** James Duncan, Adelaide, South Australia.

The above lists of patents, trade marks and designs of interest to our patrons are furnished by Davis & Davis, solicitors of American and foreign patents, Washington, D. C., and St. Paul Building, New York City.



## OBITUARY

**C. Fred Mayor**, wealthy retired wagon manufacturer of Freeport, Ill., is dead, aged 78.

**Capt. C. O. Whitney**, traveling representative of the Pioneer Pole & Shaft Co., died at his residence in Piqua, O., on December 5.

**A. H. Turner**, carriage manufacturer of Huntsville, Ala., died December 3, the result of a paralytic stroke three weeks previous. Deceased was associated with the J. W. Skinner Carriage Works and is survived by his widow.

**Julius Zimmerman**, superintendent of the Emerson-Brantingham Company's wagon factory at Batavia, Ill., died suddenly November 12, age 56. Mr. Zimmerman went to Batavia about two months ago from Racine, where he had been located for a great many years.

**H. S. Jones**, 40, secretary-treasurer of the Burroughs-Ross-Colville Co., one of the largest spoke concerns in the country and located at McMinnville, Tenn., died at Battle Creek, Mich., where he had been for six or eight months for treatment. Mr. Jones was a single man.

**Forbes H. Snider**, a retired wheelwright, formerly in business for forty years in Williamsburg, Brooklyn, N. Y., died November 26, from general debility. He was born in Ontario, Canada, June 26, 71 years ago, and lived in Brooklyn 50 years. He leaves a widow, Julia Maud; two sons and two grandchildren.

**Samuel W. Wray**, 70, for many years engaged in the manufacture of wagons and carriages at Greenfield, Ind., died November 4 after a short illness. Mr. Wray had been a resident of Greenfield for fifty years and had been in business since 1865. He is survived by four children.

### PERSONAL

**S. H. Veile**, of Kansas City, was elected president of the Fort Smith (Ark.) Wagon Works, at the annual meeting held in December.

Mr. Albert Fehling, of the old established Buenos Aires firm of Fehling Brothers, the representative carriage and automobile house of that South American city, will be in New York in January, and will probably make a visit to the trade in other cities.

### HERCULES BUYS DeWITT PLANT

It is reported that a large part of the machinery of the H. H. DeWitt manufacturing plant at Oakland City, Ind., has been secured by option of the Hercules Buggy Company, of Evansville, and will move it to Evansville. The plant has been located at Oakland City for a number of years and manufactures shafts and small parts of buggies. The Hercules Company has contracts for the output of the factory for the next two years.

The Pioneer Pole and Shaft Company, of Piqua, O., had purchased the entire plant from the local people for \$100,000 about a week previous, but it is understood that the Hercules people were interested in the sale and now practically own the gear wood department which manufactures small parts of buggies.

### WILL MOVE TO CHICAGO

The Briggs-Chicago Machinery Company has signed a contract to remove its manufacturing plant from Cedar Rapids, Ia., to North Chicago. This concern has been in the business for ten years and has built up a large business in the manufacture of contractors' dump carts.

### LUNCH WAGON FACTORY MOVES

The Closson Lunch Wagon Co., of Glens Falls, N. Y., has been purchased by Westfield, N. Y., parties who have perfected a new organization bearing the same name and will move the plant to the latter city. E. L. Tiffany, of Syracuse, is president of the new organization.

### BRISCOE TO REENGAGE IN AUTOMOBILE MANUFACTURE

Benjamin Briscoe, former president of the United States Motor Co., sailed to Europe November 9 to be gone six or eight months. When he returns it is his intention to reengage in the manufacture of automobiles; and before he returns his plans and the car which he will produce will be announced.

### BAUDETTE BUYS PONTIAC WHEEL PLANT

O. J. Baudette has purchased the plant of the Pontiac (Mich.) Wheel Co. It will be added to the body works of O. J. Baudette & Co.

### WILL MAKE WAGON WHEELS

The Anderson Company, which recently bought the Sageng threshing machine plant adjoining its own plant in St. Paul, Minn., has ordered machinery for the production of wagon wheels, and will have it installed as speedily as possible. This factory is expected to be in operation soon after the first of the year.

### CHANGES NAME AND INCREASES CAPITAL

The Buob Wheel Company has increased its capital from \$10,000 to \$40,000 and changed its name to the Wheel, Shaft, Top and Hardware Manufacturing Company.

## Wants

Help and situation wanted advertisements, one cent a word; all other advertisements in this department, 5 cents a word; Initials and figures count as words. Minimum price, 30 cents for each advertisement.

### PATENTS.

**Patents**—H. W. T. Jenner, patent attorney and mechanical expert, 608 F St., Washington, D. C. Established 1883. I make a free examination and report if a patent can be had and exactly what it will cost. Send for circular.

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### HELP WANTED

**Salesmen Wanted**—For Tennessee, Kentucky, Louisiana, Arkansas, Oklahoma, Texas. Prefer commission basis with men selling wagons and implements. Good line. Rock Hill Buggy Co., Rock Hill, S. C.

**Wanted**—A high grade man to take charge of coach stock and supply department for an automobile company located at Long Island City, New York. Must have technical knowledge of how to order and maintain an adequate supply of this stock. State age, experience and salary desired. Box 15, care The Hub, 24 Murray St., New York.

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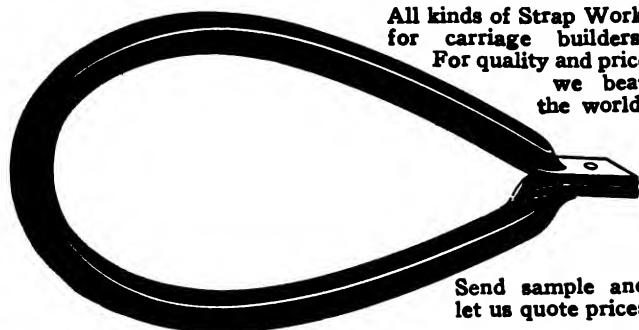
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Hopp Carriage Co., Mifflinburg, Pa.

## CARRIAGE FORGINGS

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Columbus Bolt Works, Columbus, O.  
Cortland Carriage Goods Co., Cortland, N. Y.  
Crandall, Stone & Co., Binghamton, N. Y.  
Eccles Co., Richard, Auburn, N. Y.  
Herbrand Co., Fremont, O.  
Wilcox Mfg. Co., D., Mechanicsburg, Pa.

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Parry Mfg. Co., Indianapolis, Ind.  
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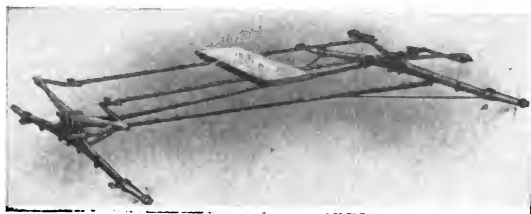
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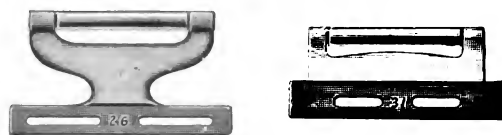
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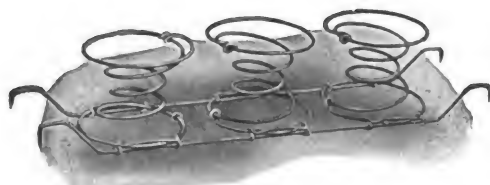
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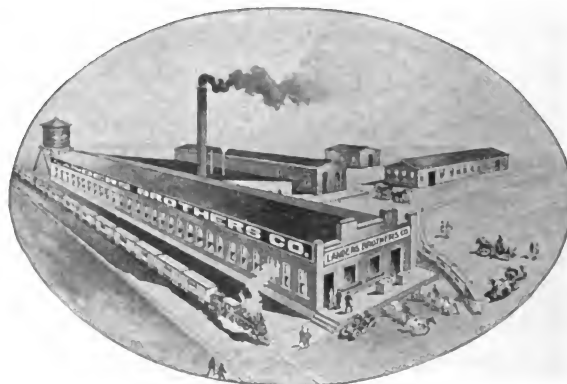


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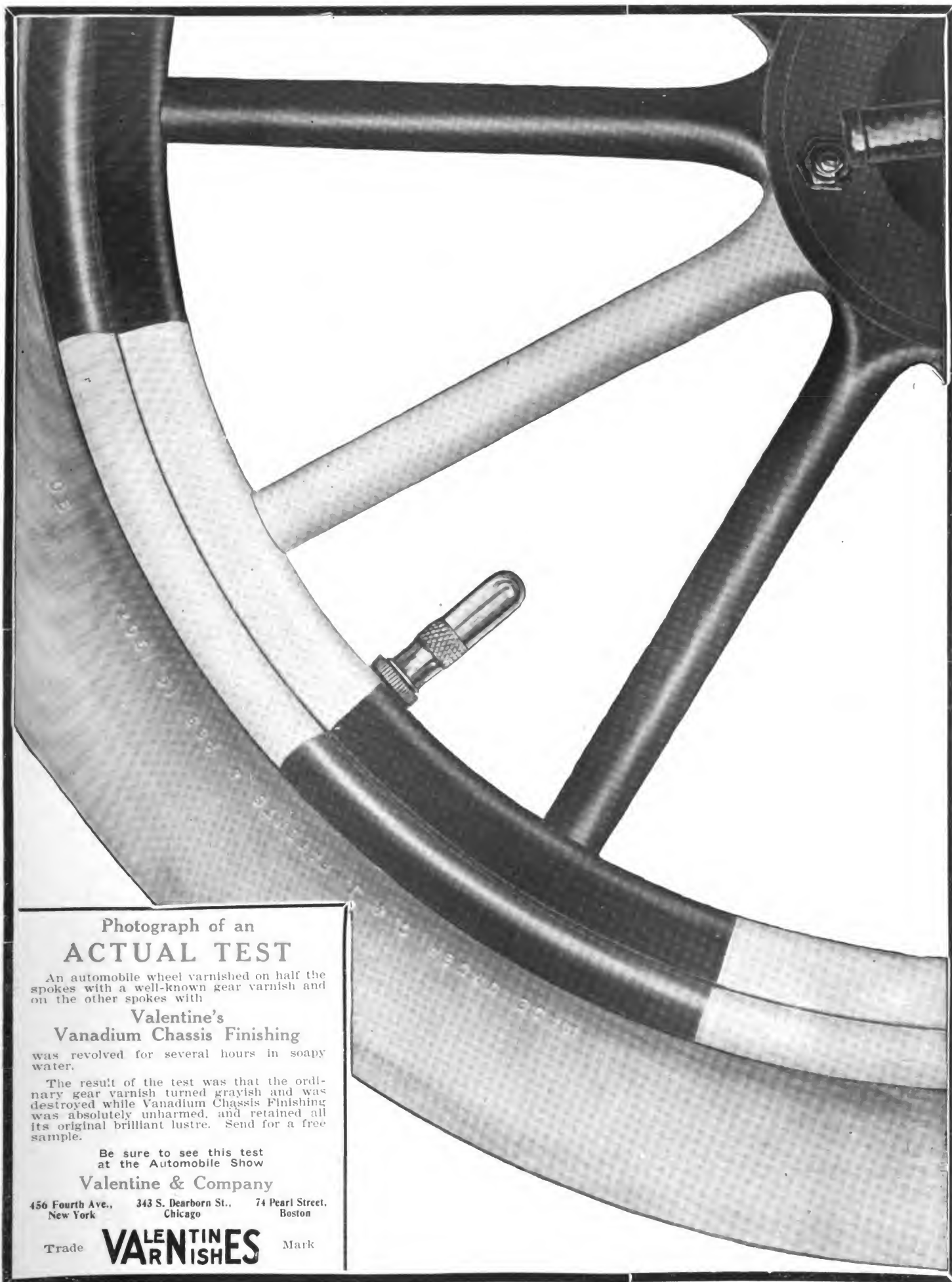
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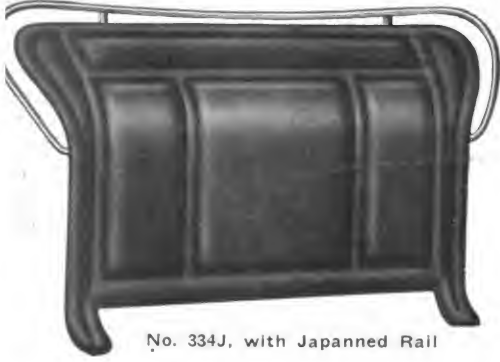
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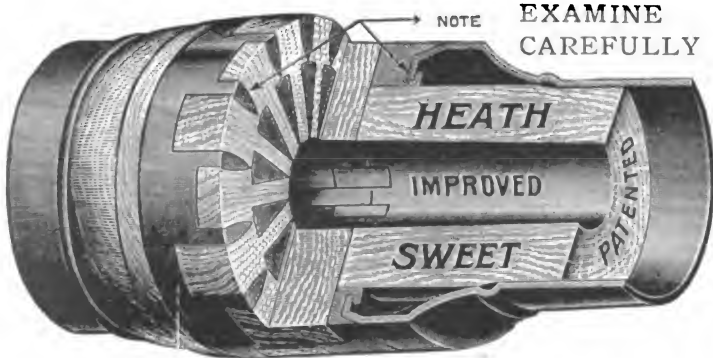
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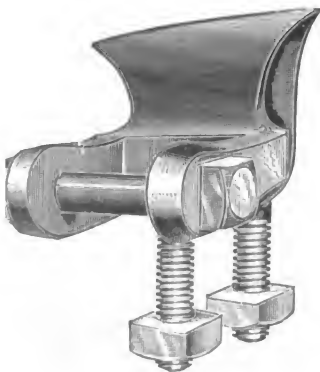
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**CARRIAGES  
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**THEIR HISTORY &  
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**By Ralph Straus**

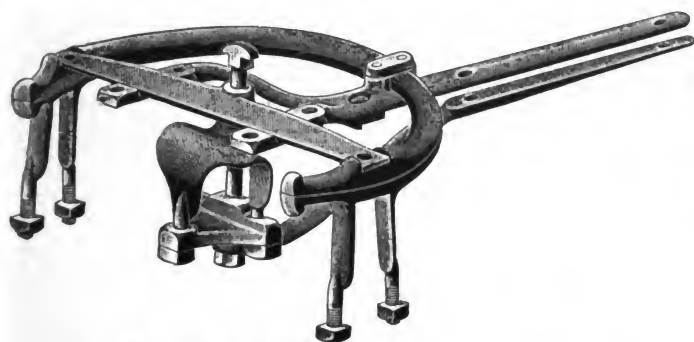
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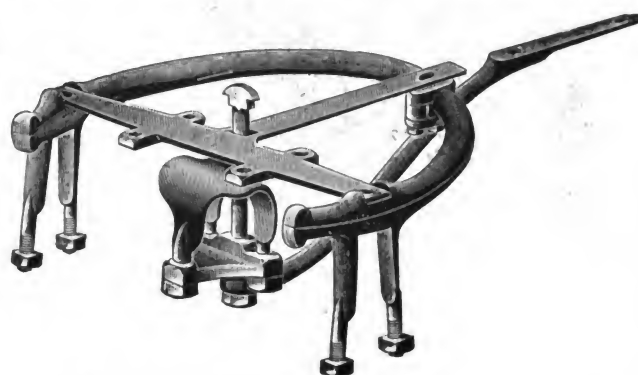
SEVERAL books have been written upon the vehicle, but almost without exception these have been compiled by coach builders or professional designers, for those who may be more particularly interested in the purely technical aspect of the question. In the present volume, Mr. Ralph Straus tells the story, in rough chronological sequence and from the historical rather than the technical standpoint, of the progress of the vehicle, from the earliest times until the general adoption of motor traction. Throughout the book, also, an attempt has been made to present, so far as is convenient, the various manners and customs of the world of traffic, and certain sections will deal with the successive legislative aspects of the carriage. The illustrations will be very numerous, adequately supplementing Mr. Straus' text, and no pains will be spared in the production of a volume which should prove of permanent historical value.

**Trade News Publishing Co.**  
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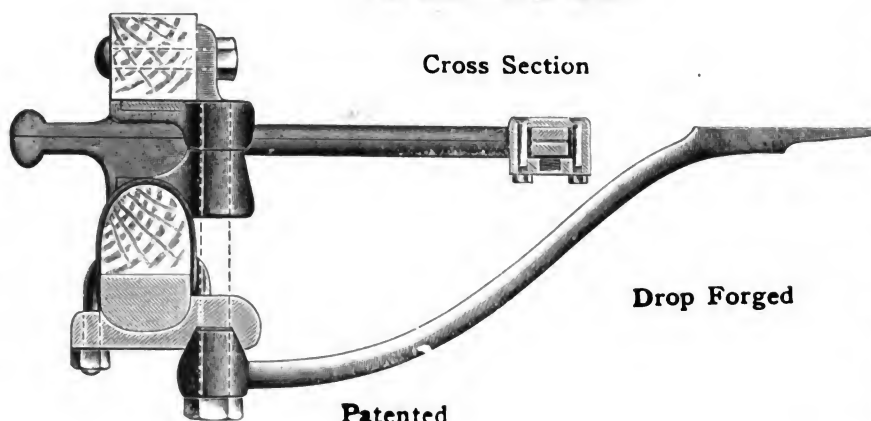
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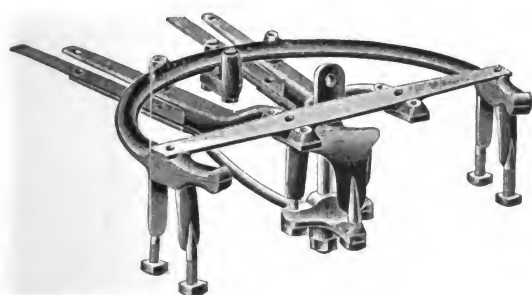


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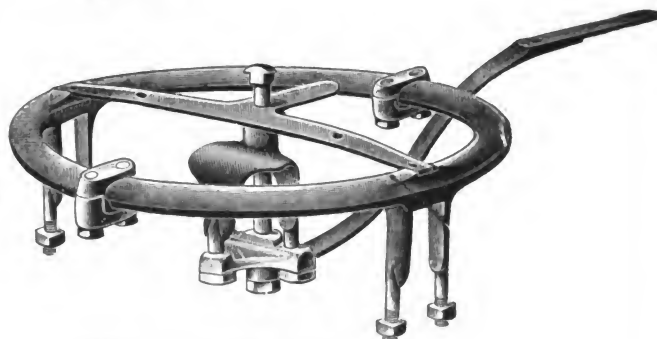
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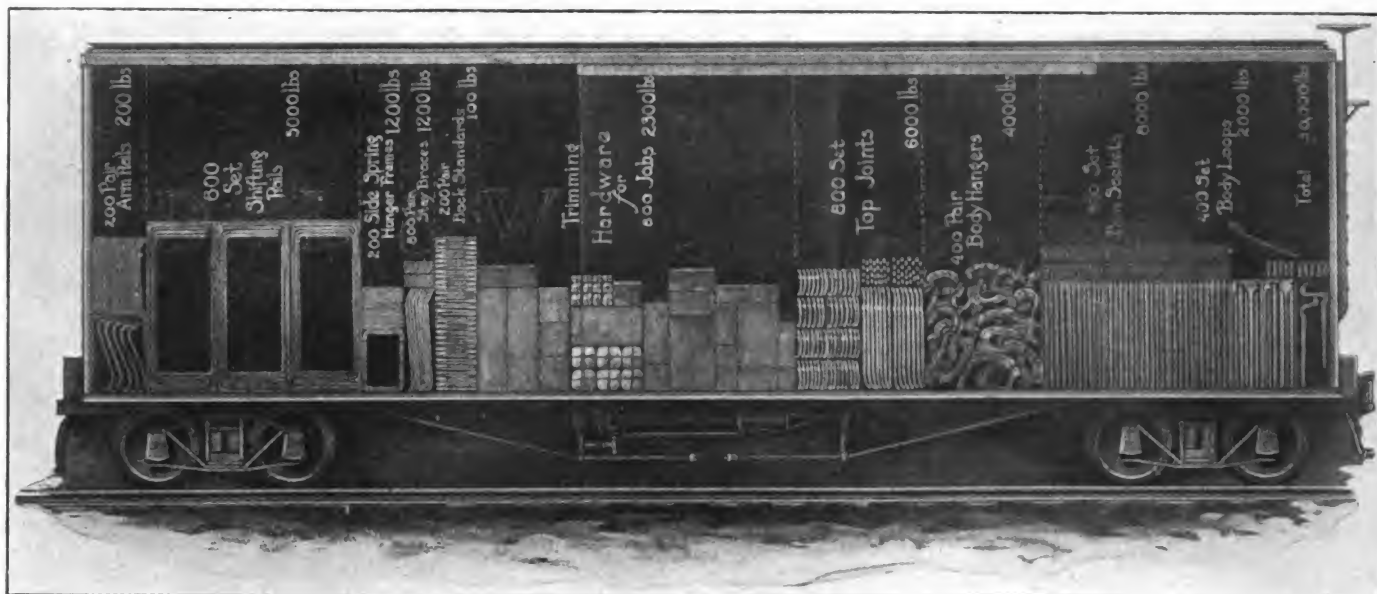
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"Economy is by no means a matter of Price. The Time and Labor Wasted in using Cheap Materials turns a Supposed Economy into an extravagance."

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President McCurdy appreciates, as every Finishing Room Investigator appreciates, that a great deal of Time and Labor are Wasted in the *vain* struggle to get a good foundation with *cheap* Priming and Roughstuff.

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The Varnish  
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NEWARK,  
N. J.  
CHICAGO,  
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# The Hub

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Entered in the New York Post Office as Second-class Matter

Vol. LIV

JANUARY, 1913

No. 10

## THE TRADE NEWS PUBLISHING CO. OF N. Y. Publishers of THE HUB

J. H. WRIGHT, President. G. A. TANNER, Secretary and Treasurer.  
24-26 MURRAY STREET, NEW YORK.

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AMERICAN HARNESS AND SADDLERY  
DIRECTORY (annual).....per copy, \$4.00

THE HUB is published monthly in the interest of employers and workmen connected with the manufacture of Carriages, Wagons, Sleighs, Automobiles and the Accessory trades, and also in the interest of Dealers.

Subscription price for the United States, Mexico, Cuba, Porto Rico, Guam, the Philippines, and the Hawaiian Islands, \$2.00, Canada, \$2.50, payable strictly in advance. Single copies, 25 cents. Remittances at risk of subscriber, unless by registered letter, or by draft, check, express or post-office order, payable to the order of TRADE NEWS PUBLISHING CO.

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### FOREIGN REPRESENTATIVES:

FRANCE.—L. Dupont, publisher of *Le Guide des Carrossiers*, 78 Rue Boissiere, Paris. Subscription price, 15 francs, postpaid.

GERMANY.—Gustave Miesen, Bohn a Rh. Subscription price, 12 marks, postpaid.

ENGLAND.—Thomas Mattison, "Floriana," Hillside Avenue, Bitterne Park, Southampton. Subscription price, 12 shillings, postpaid.

Entered in the New York Post Office as Second-class Matter.

## 1913

This year has it in its power to be kinder to the horse-drawn vehicle trade than the past twelve months.

This branch of the vehicle industry still spells conservatism in capital letters, but progress will make its appeal in time, and we hope the time is now.

The very large enterprises have made no complaints, the smaller ones have done little else than complain.

The accessory trades manufacturers have an expression of countenance that reminds one of the cat and the canary, because being very adaptable to changing circumstance, many, we could almost say most of them, have seen the force of regarding all vehicles as vehicles, no matter how propelled, and supplying the wants of the builder of any kind of a vehicle. This is good business judgment, because the broadened fields attest it.

Wagon builders have confronted some disagreeable conditions of trade that have been in the nature of an evolution of demand. The farmer, through the dealer, has found a way to make an adjustment of the farm truck that serves two purposes, much to the chagrin of

the wagon builder, but the condition will adjust itself soon.

Here and there sporadically the builder has dabbled in motor wagon building, and it seems merely a matter of time when more will do the same. The facilities for buying parts and assembling are improving all the time. This is a legitimate and presumably profitable branch of the trade that self-interest will develop. It means a broadening of the scope of the business, and that is much to be desired.

From almost all points of view the chances of development of vehicle building in 1913 are merely a question of the initiative of the individual. Those who rise to the opportunity will be progressives, those who do not are conservatives. We count on the progressives, but we think both will feel kindly towards the new year before it is dead.

## "Why Not Some Industrial Progress?"

We published an editorial under this head. We think the subject matter is very important and ought to stir up some favorable sentiment.

We receive letters of commendation of some Hub editorials, but we consider them personal, and are opposed to the usual journalistic practice of self-glorification, so continue to regard them as personal and private, though quite gratifying.

In the present instance we break the rule because of the importance of the house and the position of the writer of the letter, and because the matter is really addressed to the trade rather than to this journal.

When the designer and superintendent of a house like Chauncey Thomas & Co. is in agreement with our expressed ideas it means something, so we quote the letter:

In the November issue of your valuable journal the editorial in nine paragraphs, "Why Not Some Industrial Progress?" is extremely interesting. It strikes the keynote and makes your article a live proposition. It is a matter of interest for an organization like the C. B. N. A. to discuss this question and endeavor to return to the carriage builders of this country a share of the lost prestige to themselves and which they can bring about. The automobile is just as much of a carriage today as any horse-drawn vehicle, the propelling power is simply an application of power in a different form and does not alter the fact of its being a carriage whether the motor is gasoline, steam or electric.

The automobile has a wider range of action; buggy building, of course, has its limitations and as the article reads, "Keeping a horse-drawn vehicle in and the automobile out of this association" is a conspicuous mistake. The auto is here to stay. The recent convention of the C. B. N. A. at Atlantic City from an observer's point of view reflects great credit on the officers

who have taken so much interest in writing the able essays on conducting wholesale buggy business and reducing costs of manufacture, but it lacks a keen spirit to the average carriage manufacturer who is beset with the progress of the automobile as a share of his best carriage patronage is ebbing away and his only salvation is to build some bodies for automobile factories, etc. We learn from others and it needs the new comers in the field of activity to join you and we hope others will see it as *The Hub* journal does.

Answer to paragraph three:

The most helpful aid that the carriage maker is looking for is to find in the craft the necessary aid to assist him to assemble and build automobiles. Every carriage maker can not afford to engage mechanical engineers but the C. B. N. A. have a technical school in which all the rudiments of the engineering scheme can be taught and brought about and this can be done by inviting the auto manufacturers to join our association and become members. This school has turned out some of the best men in the business under the able instruction of Professor Johnson and the late Professor Gribbon of that institution. A large percentage of these men are employed by the automobile dealers. These are facts, why not then give the present teachers of that school the additional assistants to teach the newer generation of things so that the carriage builder can understand the accessory builders' parts, or in other words, so they can utilize the automobile combinations on the market.

Approaching the parts dealers for drawings, etc.

These dealers will be only too glad to present to the school drawings of axles, transmission gears, steering gears showing worm and sector movements adaptable for pleasure or trucking purposes; how to lay out axle pivots; differentials and how they are composed, what makes them revolve; the various gears, how they are made and how they perform their various functions and the various speeds and reverse for which they are intended; the difference between planetary, progressive or selective types of transmission; how they make the various connections between engines through clutches and gear cases to the rear driving axles showing various types of knuckle joints and their action on propeller shafts; expansion clutches; inverted clutches and multiple disc clutches; how to draw a suitable friction drum brake, an expansion brake, a clutch drum brake and an emergency brake; how to draw a toggle joint and a hundred and one other things too numerous to mention. Engines, electric motors, carburetors, controlling devices, mufflers, radiation, coils, magnetos and such studies could be taken up later.

This will help the question the carriage maker brings up, "How are we going to help ourselves get into the auto business?" We do not know anything about the mechanism. On various occasions parts builders have endeavored to sell carriage builders but they have been turned down with a deaf ear as they were unable to grasp the possibilities of the future prospects presented and because they regarded the auto as a rich man's toy. The auto builders, however, have forged ahead and made us sit up and take notice.

The writer ventures to say, if the C. B. N. A. will lay aside the hatchet and invite the auto builders to become members of this honored association and co-operate with them it will be a progressive step for the carriage builders and also help build better models of cars in our country. In fact, it will be a great help all along the line, benefiting both carriage, automobile and wagon builders, parts builders, etc., and through the medium of this school and its graduates make a more intelligent unit. The carriage builder by his years of experience, his study of economy of manufacture which has been brought out in such an exemplary manner at the association meeting by its last president have all to gain by such a move and nothing to lose. There is not the slightest reason why the carriage builder can not assemble cars as well as any other. Let those of us wake up to the fact that there is no mystery about it, that co-operation is necessary with our neighbors

and the rank and file is ready to do their share. The parts builders would be ready to advertise their goods in the carriage magazines and open up a field both for themselves and the carriage and wagon builders.

## Olympia Show

Mr. Thomas Mattison, *The Hub's* special English reporter at the Olympia Show, has gathered for illustration in our pages the cream of the exhibits.

Mr. Mattison ranks as one of the foremost body designers of England, and the examples he has selected, and which we presented last month and in this issue, give the essence of the good new, novel and advanced thought of English builders in body designing, trimming and painting for automobile work.

We hope our readers will find profit and suggestion in this fine showing of the body builders' art.

## Technical School Wakes Up

We are pleased to learn that the powers that rule our Technical School have elected two honorary members to the Board of Trustees chosen from the automobile trade.

Not only do we infer from this action that the school will benefit much, but we hail the broader, more catholic spirit that is coming to recognize that a vehicle is a vehicle no matter what the motive power, and the C. B. N. A. is representative of vehicle building, not merely buggy and wagon building.

Even Rip awakened from his dream, so there are bright prospects that we are in the yawning and stretching state, and will soon be fully aroused and open-eyed.

## Very Clever Publicity Purveyor

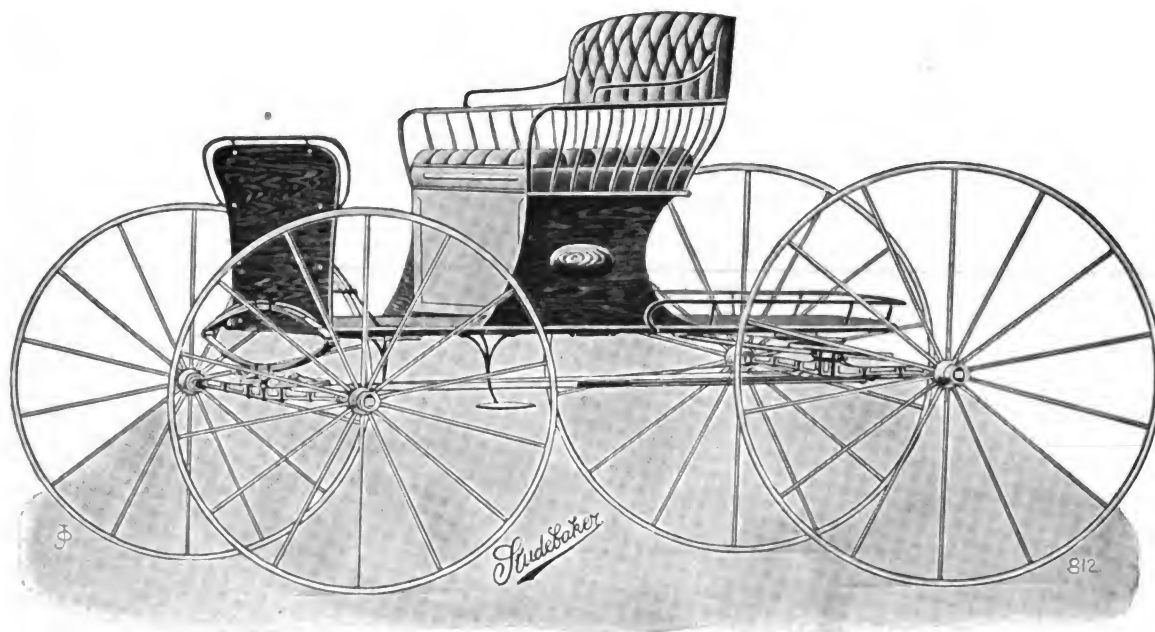
There has been sent to us a quasi biography of C. W. Nash, the motive power of Buick Motors. It starts Mr. Nash from the farm and knickerbockers, and carries him along, very cleverly, too. Incidentally the Durant-Dort is given the spotlight for a few words. Mr. J. Dallas Dort (first time we have seen it lined-out that way) is shown as the good father, and finally General Motors is allowed to have the tube of the bottle in its mouth for just a gulp or two. It is a very good piece of work. Sorry we can't publish it at usual space rates.

## OLD WHEEL CONCERN QUILTS

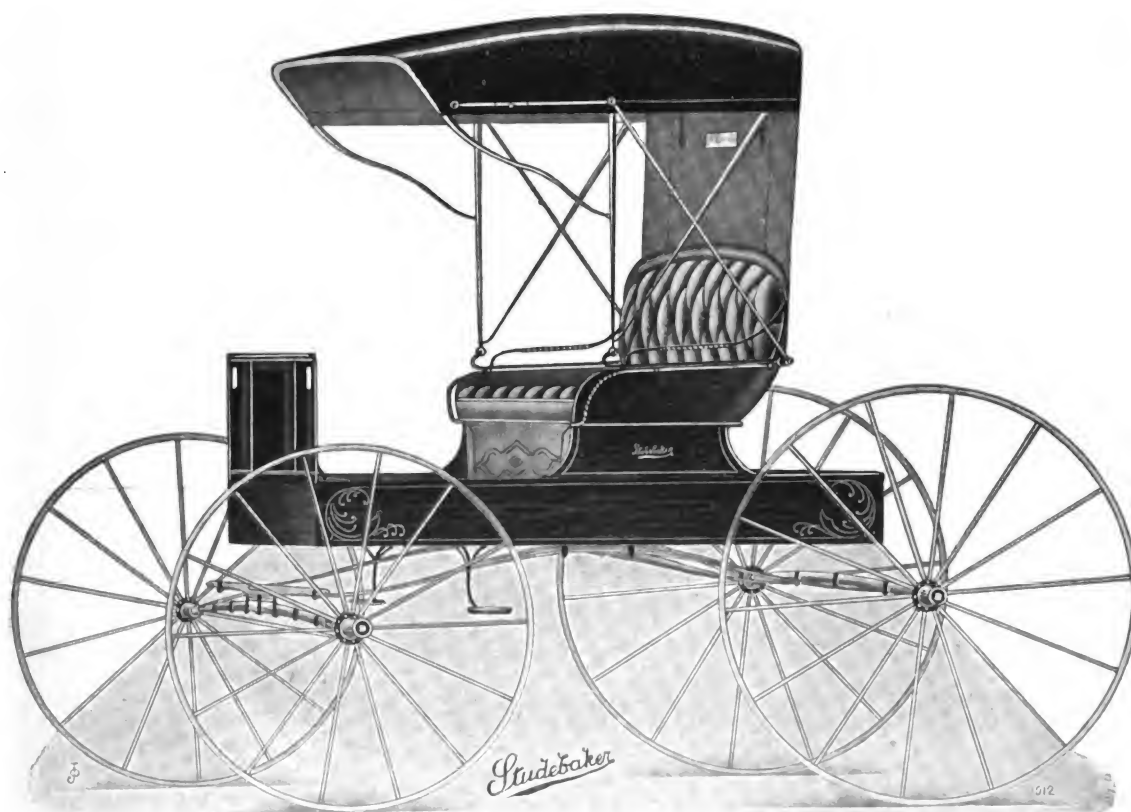
The Merrimack Wheel & Gear Company, of Amesbury, Mass., notified its employes that it would discontinue business January 1. This house was established by W. E. Biddle in 1870, who at that time manufactured bodies and gears. He was joined in 1880 by the late W. W. Smart and the manufacture of wheels was added to the body and gear business as well as complete carriages.

With the changing over the business of the Biddle & Smart Company for the manufacture of auto bodies, the wheel and gear department was sold to A. H. Carr & Co. and later to Carr and Prescott. It was purchased about five years ago by the Merrimack Wheel and Gear Company who have conducted the business since. Mr. Carr is now with the company. Mr. Prescott is now with the Hassett & Rogers Company. Mr. Hardwick, the manager, has been with the Merrimack Company since 1881, when the company consolidated.

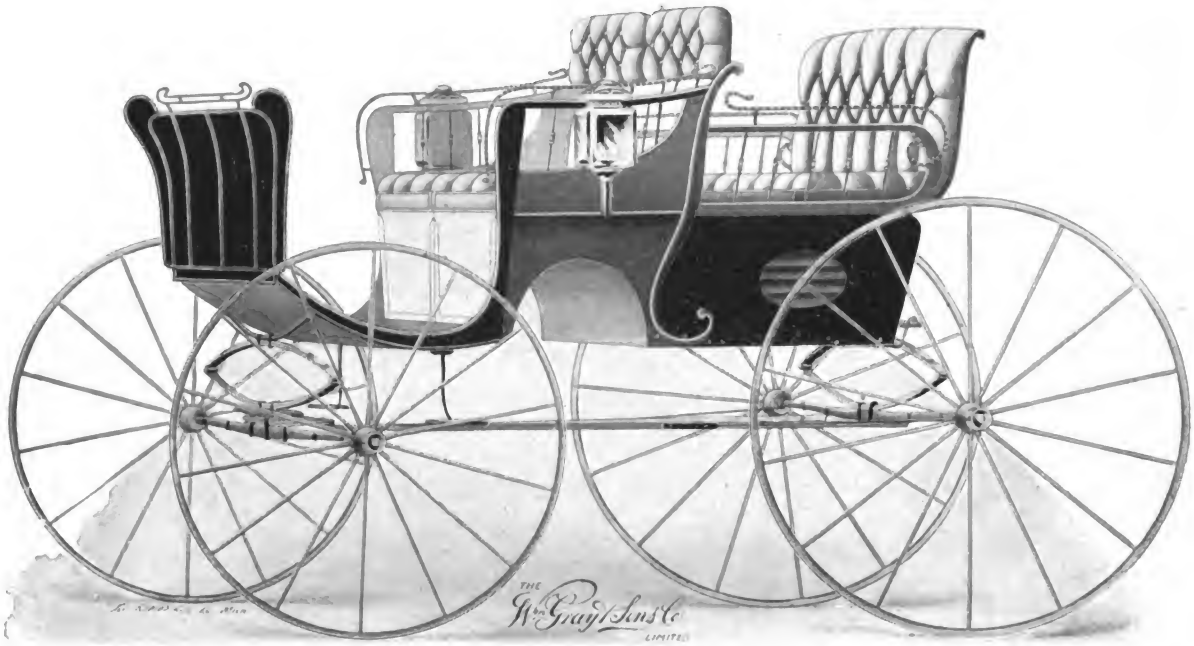
## VEHICLE FASHIONS FOR JANUARY 1913



**SINGLE BUCKBOARD**  
Built by  
**THE STUDEBAKER CORPORATION**  
South Bend, Ind.



**SOUTHERN PIANO BODY BUGGY**  
Built by  
**THE STUDEBAKER CORPORATION**  
South Bend, Ind.

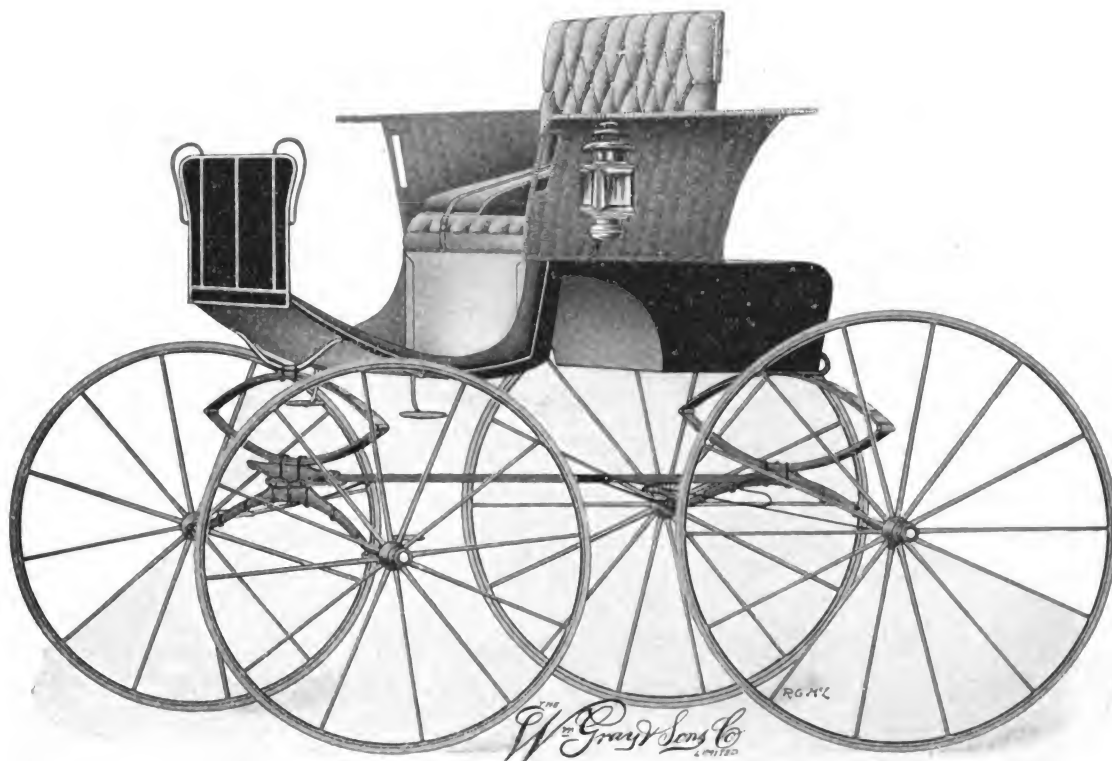


**FOUR PASSENGER TRAP**  
 Built by  
**THE WM. GRAY SONS-CAMPBELL, Limited,**  
 Chatham, Ontario, Canada

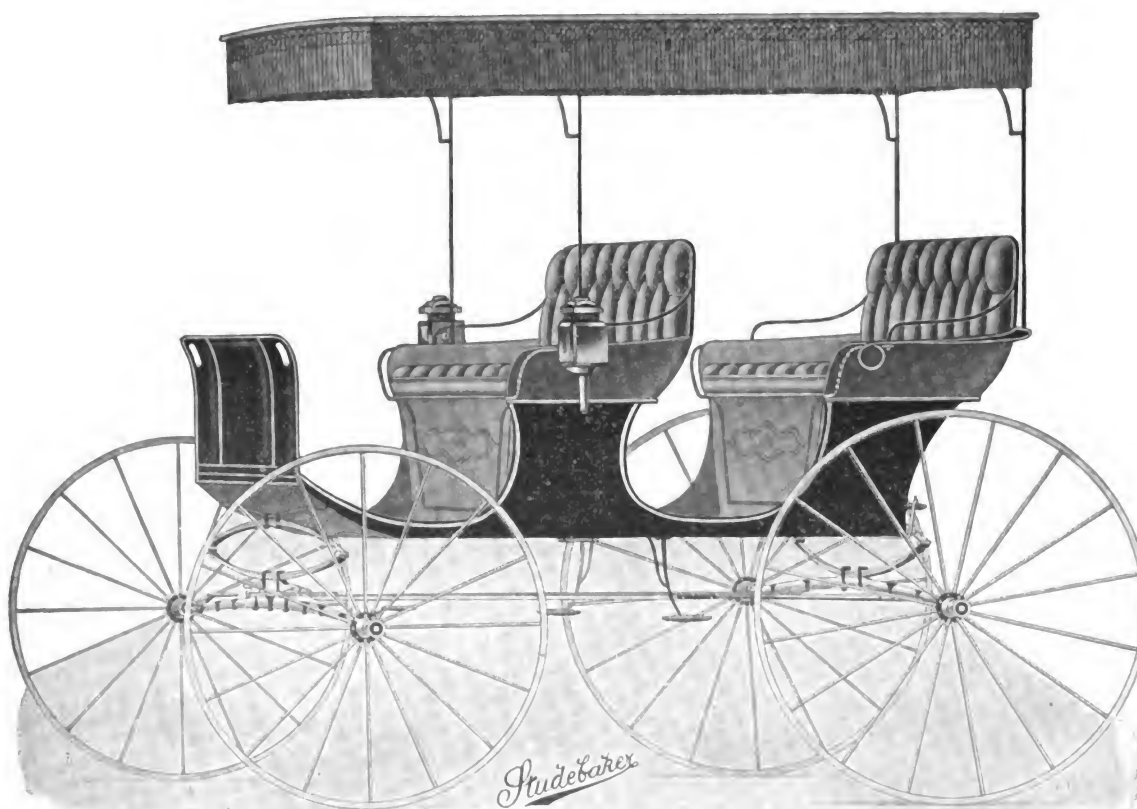


**SOUTHERN SKELETON BUGGY**  
 Built by  
**THE STUDEBAKER CORPORATION**  
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**DEVONSHIRE TRAP**  
Built by  
**THE WM. GRAY SONS-CAMPBELL, Limited,**  
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**EXTRA LIGHT END SPRING SURREY**  
Built by  
**THE STUDEBAKER CORPORATION**  
South Bend, Ind.



**WISCONSIN SIDE SPRING GEAR SLEIGH**

Built by  
**OWOSSO CARRIAGE & SLEIGH CO.,**  
 Owosso, Michigan



**SHADOW STANHOPE**

Built by  
**THE WM. GRAY SONS-CAMPBELL, Limited,**  
 Chatham, Ontario, Canada

## EXAMPLES OF THE CANADIAN BUGGY BUILDERS' ART

(See Illustrations)

We illustrate three examples of the work of Wm. Gray Sons-Campbell, Limited, the kind of vehicle produced at the extensive shops of the company at Chatham, Ontario.

This concern is very important and its operations are great in volume with product high in quality, style, finish and worthiness of work beyond criticism except of a most favorable kind.

All the ingenious ways the modern buggy builder has at command to strengthen as well as beautify work are here employed. The "line" is very complete and various ranging from light to semi-heavy, with commercial delivery wagons falling in. The Messrs. Gray say the work is just as good as its illustration in the engraving. We accord them the benefit of the statement as their reputation as honest as well as fine builders has always been proof against any other view being taken.

The new catalog for 1913 just issued by the company should be in the hands of all Canadian dealers. It is equal to going through a well stocked repository.

## SOME NEW STUDEBAKER WORK

(See Illustrations)

The energies of the Studebaker corporation are so various and widespread that it would be possible to excuse a falling from standard here and there, but such is not the fact.

The corporation has just issued new catalogs, one for northern and one for southern fields, and as customary, they are Studebaker quality.

From the catalogs we have chosen for illustration in the interest of dealers, No. 9055, a single buckboard; No. 9459, southern skeleton buggy; No. 9757, light and spring surrey, and No. 9463, southern piano body buggy.

These four styles will well illustrate how the trade in the two sections has been studied with a view to meeting all kinds of requirements with taste.

It is not necessary to dwell on the merits of construction, as Studebaker work has been too long before an appreciative public to need such comment.

## SLEIGH AUTOMOBILE FASHION

(See Illustrations)

We illustrate a sleigh from the works of the Owosso Carriage and Sleigh Co. that shows in many features the influence of living in Michigan in an atmosphere of automobiles.

This is a most comfortable, convenient and easy-riding vehicle, and much taste in design withal. It is named the Wisconsin Side Spring Gear Sleigh by the makers. Note the fore door, the spring suspension, and the body lines.

## I. T. STRAUS BUYS REX IMPERIAL LEATHER PLANT

Isaac T. Straus has severed his connection as a member of the firm of M. Straus & Sons Co., tanners, Newark, N. J., and has taken over the old plant of the Rex Imperial Leather Co., 12 to 26 Chapel street, Newark, from the Edward C. Moore Co., and will soon commence to soak in hides for automobile, carriage leathers, etc. The property is on the east side of Chapel street, about 160 feet north of Bowery street, and is on the Manufacturers' Branch of the Central Railroad. It has a frontage of 200 feet and is 195 feet deep. The plant takes in four large buildings. The new owner has plans for extensive alterations to cost in the neighborhood of \$55,000.

## ADVANCE IN VEHICLE PRICES

### Important Joint Meeting of Accessory and Carriage Manufacturers

Conditions having so changed during the last two years that those who supply raw materials, and the carriage manufacturers throughout the country, appealed to Mr. C. C. Hull, president of the Carriage Builders' National Association, to call a joint meeting of the whole trade, which resulted in a general meeting in Chicago, January 4.

Those present represented some ten states; the output represented about 520,000 finished vehicles.

Statistics presented indicated that 1,200,000 horse-drawn vehicles had been built and sold for the season of 1912, but not under very favorable terms or conditions.

Whereupon, those who furnish raw materials urged upon the vehicle manufacturers to shorten their selling terms considerably and to take into consideration the advancing market on hides, hard woods, steel, and the changing conditions confronting the vehicle industry.

It is generally known that the accessory manufacturers had made steady advances all along the line since last June, and it was demonstrated that no decline in raw materials could be expected.

Press dispatches of January 5 in all leading dailies commented upon a ten per cent. advance in finished vehicles as a result of the Chicago meeting. The general opinion prevails that ten per cent. advance will not cover the advancing costs.

The meeting developed that the accessory people sold their product to the carriage manufacturers on net 30 day terms, after the plan of the Steel Corporation.

The southern, central and western states were well represented, and those who furnished statistics had charts bearing out the changes in advancing costs.

The result of the meeting may bring about a larger and more general meeting in March. One thing is sure—the selling prices of finished vehicles must advance, but it comes at a time when it will not be felt by the dealers, who can use it as a splendid opportunity to advance their general prices.

## HARDWOOD MANUFACTURERS' ASSOCIATION

President W. E. DeLaney, of the Hardwood Manufacturers' Association of the United States, authorized a call December 10 for the next annual meeting of the association, to be held at the Hotel Sinton, Cincinnati, February 4 and 5, 1913. This convention is the largest and most important gathering of lumbermen, representing over one-half of the standing timber in the so-called "hardwood belt," which extends from Pennsylvania through the southern tier of states to Texas. There are a number of important features to be discussed relative to the industry, and the meeting will attract about 600 visitors, all of whom will be owners of standing timber or mill operators. The executive committee of the association consists of such representative men as: W. E. DeLaney, Kentucky Lumber Co., Cincinnati; J. H. Himmelberger, Himmelberger-Harrison Lumber Co., Cape Girardeau, Mo.; B. B. Burns, C. L. Ritter Co., Huntington, W. Va.; C. M. Crawford, Yellow Poplar Lumber Co., Coal Grove, Ohio; W. B. Burke, Lamb-Fish Lumber Co., Charleston, Miss.; R. M. Carrier, Carrier Lumber and Manufacturing Co., Sardis, Miss.; Clinton Crane, C. Crane Co., Cincinnati; W. H. Dawkins, W. H. Dawkins Lumber Co., Ashland, Ky.; Frank F. Fee, Crayton Hardwood Lumber Co., Dermott, Ark.; W. A. Gilchrist, Three States Lumber Co., Memphis, Tenn.; E. A. Lang, Paepcke-Leicht Lumber Co., Chicago; J. W. Oakford, Cherry River Boom and Lumber Co., Scranton, Pa.; A. B. Ransom, John B. Ransom & Co., Nashville, Tenn.; W. B. Townsend, Little River Lumber Co., Townsend, Tenn., and R. H. Vansant, of Vansant-Kitchen & Co., Ashland, Ky.

# Body Designs Shown at Olympia

**Mr. Thomas Mattison, The Hub's English Representative, Reviews  
the Trend of Best Foreign Body Styles at England's Great Show**

(Concluded from December Hub)

Continuing the enumeration of the exhibits at Olympia. The display of Messrs. Barker & Co., Ltd., of 66 South Audley street, London, W., must be credited with the premier show. Their excellence in design and finish were incontestably superior to their compeers with whom they were ranked.

This firm has employed cabriolet lines to a very artistic advantage in the designing of its special cars. It will be seen that the "D" fronted limousine we illustrate is a fine setting of the law of curvature in the spacing of the body's elevation and facial measurement. The lines are finely serpentine in the cabriolet formation of the body and finish at their bases with a richly balanced harmony.

The handsome car shown in plate No. 8, was sold to His Highness, The Khedive of Egypt, and was mounted on a

The torpedo body is difficult to fashion to new lines owing to its general inartistic outline character, but Messrs. Barker have succeeded in producing a body of plain but pleasing lines. It was built flush sided.

The painting was grey, relieved with dark mouldings. The upholstery was in green cowhide leather; cape cart hood was covered in special kamac material; Barker steel tool boxes fitted underneath the platform steps; while the lighting was C.A.V. dynamo for the head lamps, dash lamps, tail lamp, etc. Dome wings without bolt heads on surface looked very smart and workmanlike. Collapsible luggage grid to rear.

The seating accommodation on the main seat was for three, and two on the two seats facing forwards or backwards at will, and two on the driving seat.



**No. 1—RENAULT LIMOUSINE-LANDAULETTE  
A. C. PENMAN  
Dumfries, Scotland**

40-50 h.p. Rolls-Royce chassis. The body being of special design with ventilating windows, round top sides and painted cafe-au-lait, and upholstered in drab cloth to match. The car was luxuriously fitted interiorly and equipped with C.A.V. dynamo lighting set for the head lamps, dash lamps, interior lights, etc; speedometer to the interior and dash board; double hat cords and parcel net; folding arm to the main seat; rich cabinet work to the interior roof, doors, etc. There was accommodation for five inside, and two on the driving seat. The chassis and body work mountings were silver plated.

Plate No. 9 was a torpedo body of exclusive design, and was fitted to a 40-50 Rolls-Royce chassis. It will be seen that the lines show some character, which should be the controlling effort in every design by whomsoever produced, because it is character that counts in the lines of a car body as well as in the life's work of men.

Speedometer, horn and other fittings completed the finish of a very smart vehicle of its type.

Plate No. 10 shows a specially designed Barker "D" fronted limousine-landaulette body, mounted on a 25 h.p. Silent Knight Panhard chassis.

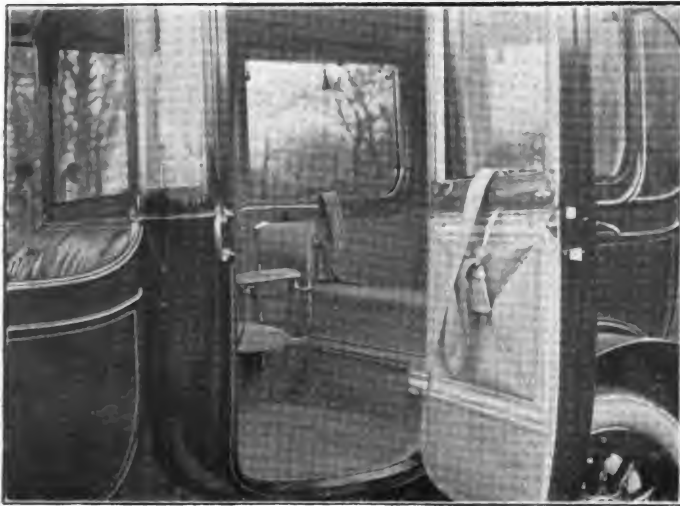
This body is smartly cabrioleted in its lines, the "D" coned quarter having a very effective bearing on the car's appearance as well as being a provision for additional room to the inside.

It had seating accommodation for five in the interior and two on the driving seat.

The painting was of a rich cafe-au-lait color, while the upholstery was of special fawn cloth to match the painting, and luxuriously fitted with Peto & Radford dynamo lighting set. To take spare wheel a well was sunk in platform step. In the interior there were two extra seats which were made

so as to sit backwards or forwards at will. The car was sold to The Right Hon. The Earl of Onslow.

These high class cars maintained the very high standing of this old London firm so famous for its Barker brougham, while the firm has a reputation of 200 years trading to its credit and are carriage builders to His Majesty the King.



**No. 2—INTERIOR OF RENAULT LIMOUSINE  
LANDAULETTE  
A. C. PENMAN  
Dumfries, Scotland**

Messrs. Barker also showed a Barker design of double cabriolet on a 26 h.p. six cylinder Delauney-Belleville chassis. The car was painted a most effective peacock blue, and trimmed in corded fawn cloth to the interior, and in blue leather to the driving seat to match the painting.

They also had on their stand a double Pullman body mounted

carriage manufacturers in Scotland. While others have stood still and held to the horse carriage output only, Mr. Penman has gone forward with the progress of the motor, and now, not only in Scotland, but well over the border, he has a high reputation as a motor carriage manufacturer.

(See No. 1.)

The heavy car was a limousine landaulette on a Renault chassis of 20-30 h.p. The body was spacious, the front being cabriolet quartered with deep door to harmonize, while the hind quarter was fashioned to follow the wing line on its bottomside, and curving into the door bottomside. The "D" front quarter, which is such a necessity in limousine bodies, was fashioned with a return line running into the door bottomside line, the covered swell of the "D" as it vanished to the bottomside being very effective. These little improvements in the design of a body create an appealing attention in their aggregate which tells on the visitor and buyer insensibly.

The body was fitted to a Renault chassis, having a wheel base of 11 feet 1½ inches, with extra large tires, 895 x 135, grooved Dunlops on front wheels, studded Dunlops on rear wheels, Warland wheels and one XXXX spare rim.

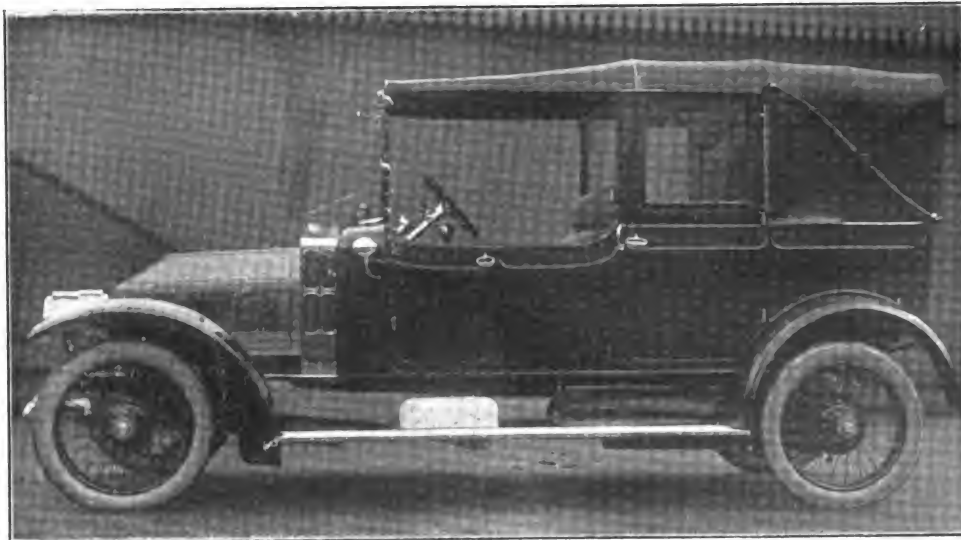
(See No. 2.)

The interior of the car was most luxuriously upholstered in French grey cord, edged with silk laces to harmonize; carpet of velvet pile. Front seat finished in best leather, while the canopy over the chauffeurs' seat was in embossed leather on the underside.

The quarter squabbing was fitted with pockets; polished hardwood fittings around windows; spring silk blinds; parcel and hat racks; smoker's companion, and ladies' companion with watch. Frameless windows, which had a hinged flap to rest on the waist rail of the door, and so run the water off when the glass frame was up.

The seating was for three on the rear seat, with two folding seats facing forward or sideways. The driving seat had provision for one beside the chauffeur's seat.

Complete C.A.V. lighting set, including head lights. Bulb horn on left hand side, and Klaxon horn. A. T. speedometer



**No. 3—DEASY CABRIOLET  
A. C. PENMAN  
Dumfries, Scotland**

on a 40-50 Rolls-Royce chassis for personal driving, the painting being of a rich dark green with black mouldings, relieved with light green fine lines. The upholstery was of fawn cloth, special dome roof, etc., and usual accessories.

A. C. Penman, of Dumfries, Scotland, exhibited a collection of three cars of high finish and possessing improved points in design.

Mr. Penman may justly be termed one of the pioneer motor

with 60 mile record, steps and driving mirror; luggage rail on top.

The photo drawing (see No. 2) explains the plain but rich design of the upholstery. In sombre trimming it is much more difficult to surface the squabbing with creative effect than where there are pleatings which can be decoratively made to conform to breadths and depths more easily than when left plain, but the plain figuring is the richest when deftly done



by art workmen. This the drawing fully shows. This car was painted a bronze green.

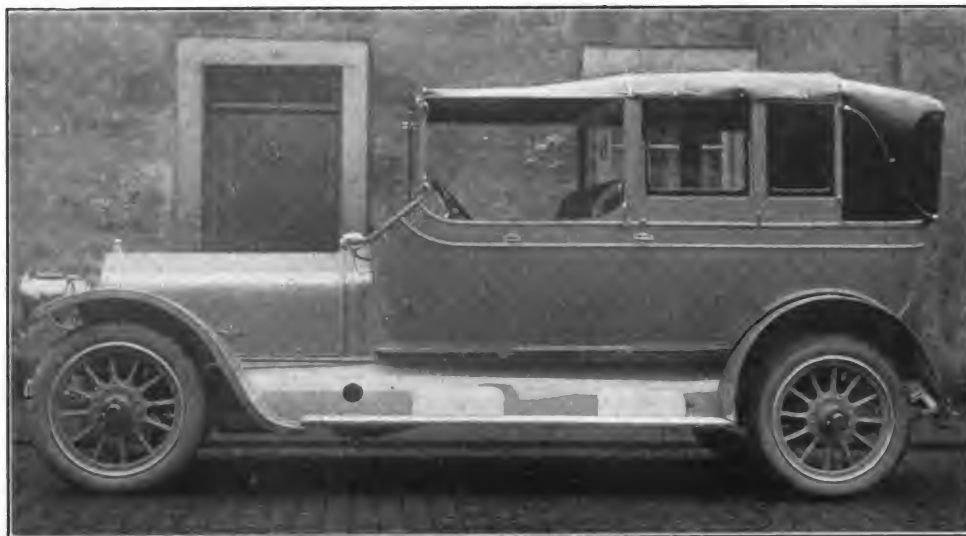
Drawing No. 3 shows what the builder has named a Deasy Cabriolet. The hind body is of parallel depth in the quarter and door, the front quarter and door being cut down to relieve the side's sameness; the belt panelling was end swept to kill the flatness that a straight belt line conveys.

This body, with its head mechanism, which is a folding extension, is patented. It is a neat and roomy car and mounted on

head mechanism which could readily be brought into requisition in opening and closing.

It was mounted on 24-30 h.p. Wolseley chassis, six cylinder, with self starter; grooved Dunlop tires on front wheels; studded tires on hind wheels; extra wheel with studded tire; complete electric side and tail lamps; Rushmore head lights, swivelling off steering; horn; step mats; A. T. speedometer; driving mirror; pillar lamp on steering column.

The trimming was in antique green leather, with special



**No. 4—WOLSELEY QUARTER LIGHT CABRIOLET**  
A. C. PENMAN  
Dumfries, Scotland

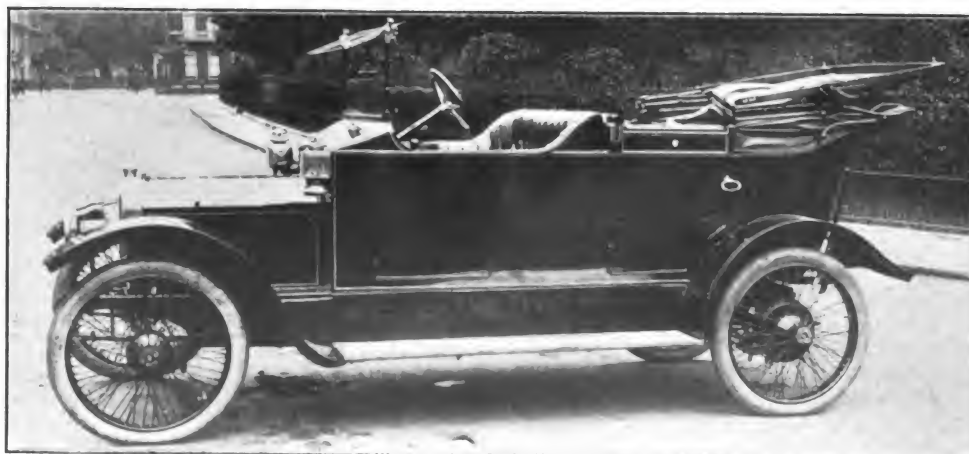
18-24 Sindley-Deasy chassis with silent Knight engine, Lanchester springs, detachable wire wheels, tires 820 x 120, studded on rear wheels; one spare wheel with studded tire complete; electric side and tail lamps; Rushmore head lights and generator; pillar lamp and inside roof lamp; speedometer and driving mirror; step mats and watch.

The upholstery was in green suede leather, with special spring cushioned backs; hind seat provided seating for three, and two

spring cushion and backs, and wind screen opening outwards.

Offord & Sons, Ltd., 67 George street, Portman square, London, W., exhibited three fine examples of their work. This firm has always been in the van of progressive carriage building and their motor bodies fully maintained their reputation for inventiveness that leads in the mechanism and designing of these vehicles.

Plate No. 6 shows one of their light cabriolet bodies mounted



**No. 5—CABRIOLET**  
OFFORD & SONS, LTD.  
London

on folding seats; two on chauffeur's seat, which was protected with a folding wind screen of special construction. The painting of this car was in contrasting shades of blue.

Plate No. 4 shows a Wolseley quarter light cabriolet, with patented qualifications and mechanism. It was a fine roomy car on plain lines, fitted with patent extension and folding

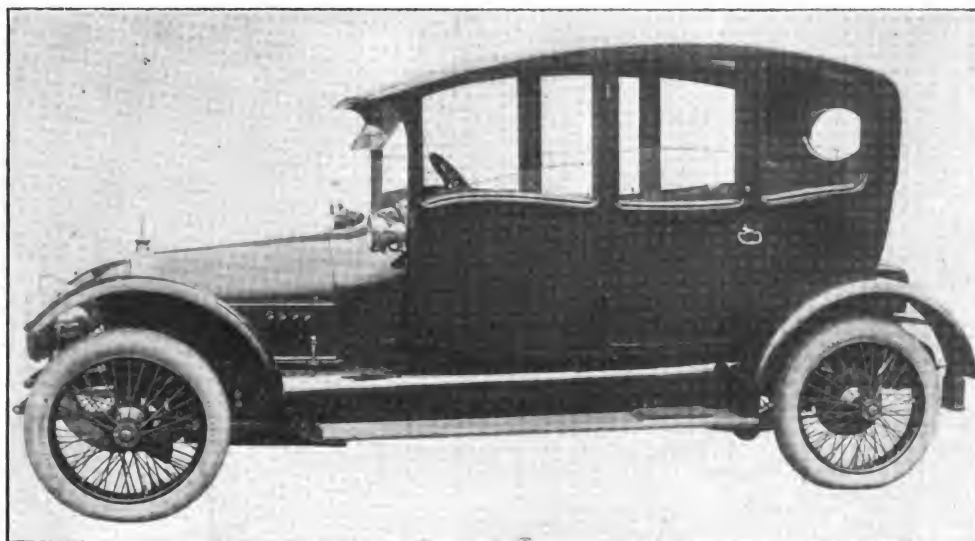
on a 13-9 B. S. A. chassis. The head mechanism was concealed and when opened out showed a compact folding that gave a clean finish to the car which the photo fully explains. The body, though of the usual flush sided type, had individual points of improvements about it that rendered an attraction.

It was painted French grey, relieved with green mouldings.

The upholstery was of green leather. The hood was covered with a new Japanese leather, which is of exceptional toughness and at the same time is only half as heavy as the usual type of hood leather.

The second car was of similar build and design, but slightly smaller and fitted to a Ford chassis similar to the B. S. A.

formation, but though it is unfitted for carrying luggage, yet the rounding surfaces have the effect of combatting windage pressure in throwing it off, while a flattened table roof allows the wind to hold on, and so keep the speed of the car in check. A correct construction as to surfaces in a body has a lot to do in helping or marring the speed of a car.



**No. 6—SALOON CAR**  
**OFFORD & SONS, LTD.**  
London

It was not so elaborately fitted. The hood mechanism was also different in that it had outside knuckle joints in the place of the automatic invisible joints fitted to the B. S. A., while at the same time this hood is quite as easily lowered by one person in a few seconds. The mechanism of these hoods is patented by Messrs. Offord.

The body was upholstered in plain Russian leather, with no buttons or pleats or corners, everything plain up to the elbow line. Above the elbow line was all polished veneer work.

The two front seats were adjustable arm chairs, the near side one swinging on a pivot to allow entrance to the front, there being only two doors in the center of the body. The top



**No. 7—TRIPLE BERLINE**  
**BRITISH-"GREGOIRE" AGENCY**  
London

The third car (Plate No. 6) was fitted to a 15-9 Crossley chassis. It was a special saloon limousine body, seating four inside. The general outline of the body was of a streamline form, which is clearly defined on the belt panel line. All the exterior corners were rounded and there were no mouldings at all on the body, special attention having been given to ease of cleaning which the absence of corners and crevices greatly enhance. The roof was of an unusually rounding

quarters and doors were fitted with frameless plate glasses, all being made to open.

The car was exceptionally and luxuriously fitted with lighting dynamos, which supplied head, side and tail lamps, and four lights to the interior, electric horn, etc.

The painting was a rich blue with a gold line, the interior color being claret, while all the metal fittings were gilded.

The Gregoire-British Agency, Ltd., of 2 Halking place, Bel-

grave square, London S. W., exhibited two Gregorie cars, one a three seater for personal driving, a unique little vehicle of its kind. The body was very deep and on cabriolet lines and protected with half hood, the painting being yellow body with black mouldings and panellings. It is a style of car that has a future before it providing the price answers to the uses the

The body seated six inside, with one folding to give access to the two back seats, chest of drawers to front seats and intermediate ones.

The inside roof was covered in padded silk; glass screen in front to open; bonnet sloping; metal wings; extra long steps covered with lino-rubber and finished off with brass beading.

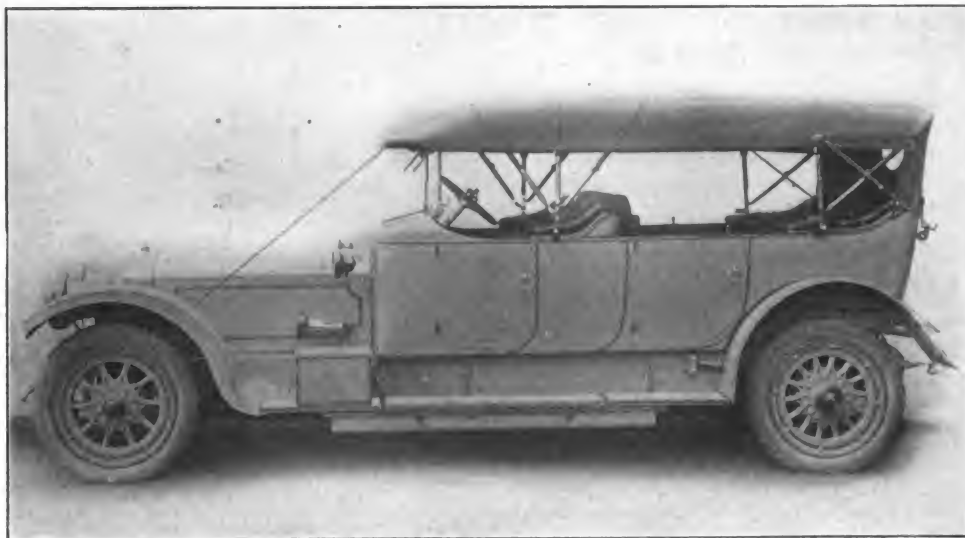


**No. 8—"D" FRONTED LIMOUSINE**  
**BARKER & CO., LTD.**  
London

car can be made to serve, which doubtless the makers have taken full measure of.

The heavy car they exhibited was a Triple Berline (see Plate No. 7). It was a finely finished car, and fitted with quaint window framing, the frames being subdivided into a series of small pane frames, the effect being very quaint. The frames were of polished maple and looked very rich. The design was

The car was fitted up with spacious imperials, the roof one following the shape of the body, while the back imperial was made to the corner pillar lines of the body and rested upon a special platform to which it was strapped. These fittings were all covered with pig skin and are a revival of pre-railway days when all closed traveling carriages were fitted up with these accessories, as well as with a sword case in the back



**No. 9—TORPEDO BODY**  
**BARKER & CO., LTD.**  
London

a composite of cabriolet and chariot body lines woven deftly to the formation of a saloon car of special design, but more suited to continental tastes than to English motorists. The car was richly finished in the painting and upholstery, which was of brocaded silk. The French excel in art upholstery design and in the brilliant surface they produce in their painting and varnishing.

top quarter. The earliest broughams were even fitted with this provision.

The imperials fitted to this car were made with divisions to carry boxes, tools and tires. The blinds were of silk, as were also the curtains. The car was fitted with dynamo electric lighting to roof, two head lights, four side lamps and two dashboard lamps.

The painting was of a deep rich yellow, with black contrasting, and highly finished.

The body was mounted on a 16-24 extra long chassis; four cylinders, cast in block, bore 80 mm., stroke 160 mm., giving over 35 h.p. at 1,600 revolutions per minute.

Thermo-syphon cooling; Bosch magneto; Zenith carburetor; silent chain distribution; leather to metal clutch; gate change gear box; four speed and reverse; live axle. Wheels, five 880 x 210 Riley detachable wire wheels. Tires, four 880 x 120 plain Michelin.

## A DIRECTORY OF COMMERCIAL AND AGRICULTURAL ORGANIZATIONS

In a Senate resolution introduced by Senator Knute Nelson, of Minnesota, and passed December 12, 1912, the Department of Commerce and Labor is requested to prepare a list of commercial and agricultural organizations of the United States; this list to be submitted to the Senate not later than February 15, 1913, 1,500 copies of it to be printed for distribution.

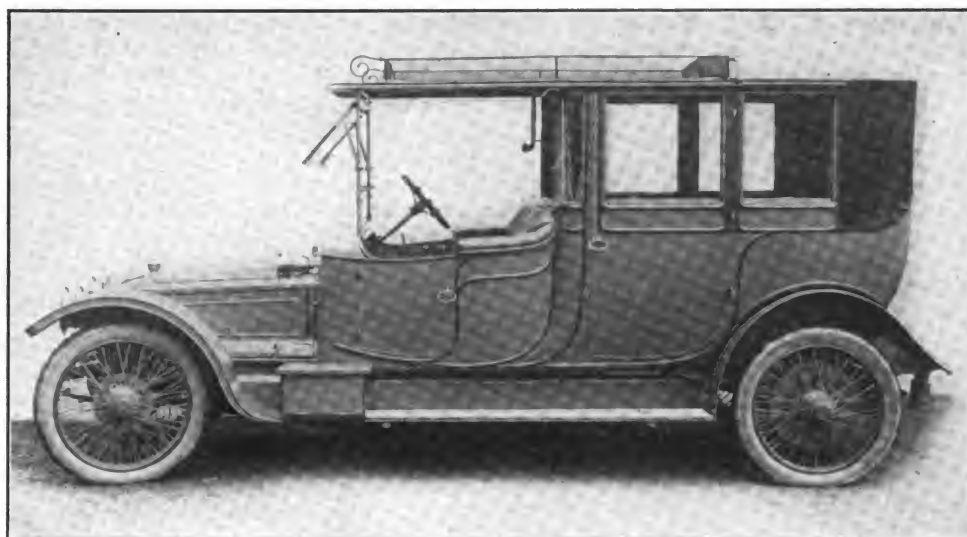
The task of preparing the list of commercial organizations has been assigned by the Department to the Bureau of Foreign

and Domestic Commerce or merchants association is the center of trade progress and trade information.

Information in detail about such organizations for the entire country is now nowhere available to the public in satisfactory form. Some years since the Interstate Commerce Commission issued a list of commercial and agricultural organizations, but as many changes have since occurred that list is now far from complete.

The Bureau of Foreign and Domestic Commerce has now in its files full information in regard to over 2,000 commercial organizations. Circulars will be sent at once to postmasters all over the country in order to obtain such facts as it may be possible to secure before February 15 about as many commercial associations as may be reached.

Any chamber of commerce, board of trade, manufacturers' association, commercial club, or similar body, which has not yet filed a record of its existence and activities with the Bureau should write at once to that office and secure a form with which to return these facts. For a live organization to be omitted from the list which is about to be published would be a misfortune. Every effort will be made by the Bureau to secure as complete a list as possible within the time given for its preparation.



No. 10—LIMOUSINE-LANDAULETTE  
BARKER & CO., LTD.  
London

and Domestic Commerce. Very fortunately it happens that for nearly two years past that Bureau has been collecting for its own use in its work of promoting commerce information in detail in regard to the commercial organizations of the United States—their functions, dues, income, number of members, districts served, standing committees, and similar facts. By the passage of this Senate resolution there is presented to the Bureau an admirable opportunity to place this information at the service of the commercial public. The value of this detailed information in regard to each organization will at once be apparent to any business man. The facts with respect to committees, bureaus, and similar matters will be given concisely by suitable symbols. "CA," for example, may indicate the maintenance of a traffic bureau in an organization; "CB" may be a foreign trade bureau, and in the same way all the activities of a chamber of commerce or other association may be shown in a line or two on a page of this directory. The officers of the Bureau feel that an official directory of commercial organizations should be issued annually, as such a record would serve many useful purposes. It would be in constant demand by business men. The development of the service and importance of trade associations during the past decade has been very great, and in hundreds of communities

There is now pending in the House of Representatives a bill (H. R. No. 25,880) authorizing the preparation of a directory of commercial organizations annually. If this bill passes there will be maintained in the Bureau a regular service for the collection of this information. No doubt is entertained as to the value of such a permanent service in the Bureau of Foreign and Domestic Commerce, of the Department of Commerce and Labor.

## VALIDITY OF THE ADAMS TIRE TREAD PATENT

In July, 1911, Judge Platt, in the United States District Court, Hartford, Conn., declared against the application of the Calvin T. Adams patent, No. 609,320, to heavy automobile tires, in the suit of the Metallic Rubber Tire Co., against the Hartford Rubber Works Co. On the dismissal of the suit, the plaintiffs appealed, with the result that Judge Platt's decision has been reversed in the Court of Appeals by Judge Noyes.

The patent is for preventing the yielding tires of bicycles and other wheeled vehicles from slipping in the roadway as they are particularly apt to do when the roadway is smooth and wet.

## TECHNICAL CRITICISMS OF OLYMPIA SHOW

Cooper's Journal makes some practical observations, which we quote in part: One of the first things to strike one is that there are still many chassis which retain the horizontal bonnet. This handicaps the body builder, seeing that practically all the Continental makers have discarded this feature.

The result of these horizontal lines is a serious discrepancy in the size of the bonnet and the size of the body immediately behind it, which brings about very bad proportions that no amount of skill on the designer's part can blend, and therefore the chassis and body must always appear as two separate units.

Where an attempt has been made to bring the dash into harmony with such bonnet lines, the latter have been swept down, in many cases to a square corner which is productive of angular and unhappy results, this angular feature of the bonnets being an accentuation of the horizontal ridge at the top.

In one case we saw a particularly angular bonnet swept up into a very short scuttle not more than six inches deep, on an otherwise very neat little coupe, with really punishing results.

Another objectionable feature in bonnets is that they seem to get longer and more barrel-like than ever; wheel bases are increasing in length, but the room for the poor coach builders, that is from the back of the steering wheel to the hind axle center, which really constitutes the body space, is, if anything, more encroached upon. It almost appears that it is the intention of the engineer to occupy all the space he possibly can and begrudge the coach builder the space that is so essential to the successful design and execution of his work, to say nothing of the comfort of the passengers, which should be, after all, the very first consideration of engineer and body builder combined.

The next point we note is interiors. One style of trimming—the half diamond and pleat—was almost universal, and although there is no denying the fact that it is a good style, greater variety would not be amiss, but trimmings seem to run according to "fashion."

False elbows were frequently seen, which were so fixed that they only stood about two inches from the top of the seat, and therefore encroached on the seating room on the top line of the seat; there are but few bodies that can afford to sacrifice seating room in this way. If the width of bodies be increased, barge-like bodies would be the result.

There seemed to be but three elbow lines in the exhibition. There are, of course, many variations of the same lines, but they are all based on one or other of the above.

These are, first, the straight elbow line. This is undoubtedly the most popular. Next in order comes what has been named the "wave" line, giving a more or less boat-shaped body with the elbow line or top line of the body sloping upwards to the rear at an angle.

The last elbow line is that which runs straight across the door and is cut up more or less along the quarter, which certainly forms a very excellent line. It is, however, to be regretted that there is not greater diversity displayed by the body-building industry in inventing a greater variety of lines upon which entirely new designs could be built up.

Interiors must now be inlaid if the lead of the show is to become the fashion. All kinds of interiors are now inlaid, and it is a good feature as it reduces the dust cleansing problem to a minimum and gives the chauffeur more time to devote to other matters.

The fashionable colors for interiors are light colored and well figured woods to make a suitable contrast with any dark-colored wood such as satinwood or sycamore with mahogany, walnut, or rosewood.

Lights or windows must now be of the frameless variety, made to lift up and down in fixed or jointed channels. Some

are also made to slide sideways and others are fixed, but in all cases they must be frameless.

The modern enclosed limousine must have three lights along the side, and a V front; this type of front being a good one from the engineering point of view as it offers a smaller resistance to the wind. The old dee-front, in all cases of interior driving, has apparently disappeared, and a good thing too, as it formed an objectionable obstruction in the way of the driver.

The only point to remark on backs is that the rear lights in limousines are increasing in size.

It is very interesting to note that turn-unders are rapidly decreasing, and that the motor body builders are coming back to what the old coach builders found to give very satisfactory results and a much better appearance, that is, a very light turnunder, which sets off the paint much better.

In the color schemes blues and clarets with, of course, black moldings, were the most popular colors, and here again we have to record that motor body builders are adhering to those colors whose real worth had been proved in the good old coaching days, for these colors will stand the wear and tear of time far better than the brighter ones once so popular at Olympia, and which will probably disappear from the motor coach paint shops in the not distant future.

Door plates are now more frequently stopped at the elbow line, and with reason, for a door plate is not an ornamental feature by any means, but at the same time it must be understood that it requires greater skill in making and fitting the door than would otherwise be the case. But as we progress in an industry which is really not yet very old, greater skill is naturally acquired.

Treating door plates as described permits of the moldings above the elbow lines being unbroken surfaces instead of, as previously, the door plate intersecting it and so spoiling what would otherwise form an excellent surface.

Where glass frames are used they are in lighter sections. It is regrettable that so many are still shown, but by lightening them they could still compete with the frameless lights.

Among many varieties and shades of colors, one of the most fashionable is a fawn which has been called "cafe au lait," and if corresponding moldings are also a feature of the color scheme, it is very taking, and there is no denying the fact that highly attractive results are achieved by this combination.

Doors, or perhaps it would be more correct to say entrances, are still in too many instances not what they ought to be. Doors are frequently cut away until half the bottom has disappeared, which seriously interferes with the passengers' ingress and egress and reduces the entrance to an inconvenient minimum. Passengers are also likely to damage their clothes from this cause, and it would be to the credit of our trade if such objectionable features were not allowed to appear again.

It is, however, pleasing to record that although there is room for criticism, the motor body building industry has made great strides during the last year or two, and the more credit is due owing to the fact that it is an industry still in its infancy.

But still much remains to be done in the line of removing such defects as are indicated by what we have said above.

Side sweeps are much fainter than they were a few years ago, and this is much to be regretted, as a good bold side sweep always has a tendency to set a car off and make what might otherwise look a very plain body, bold and handsome in appearance, it being very graceful when seen in perspective.

On one stand a torpedo touring car was shown having a door hinged on the front line. It had a piece cut from the lower back corner for the wing, and the result of this was that when



the door was open there was hardly any space through which to pass.

Landaulettes in some cases showed too great an expanse of head leather, which spoiled the whole design.

Where this feature appeared no pains had apparently been taken to reduce it. This is all the more regrettable seeing that so many excellent fittings are now placed on the market by the coach ironmongers with which this expanse can be reduced in a perfectly satisfactory manner, as was shown by many good examples in the show.

These latest fittings have many features to recommend them. They permit of the introduction of a light of good area in the quarter, admitting ample light to rear seats; they reduce the size of the head leather; and are capable of being lowered to a reasonable height, as low, in fact, as is really desirable.

The above remarks, which apply to the head leathers of landaulettes, may also be considered to apply to cabriolets, on some of which the quarters had such a heavy appearance that the body seemed overwhelmed by it.

Coupees, in some cases, showed quarter lights, otherwise no material change was noticed on this type of body.

Except as regards a more general adoption of taper bonnets and more gracefully "flowing-in" lines at the dash, not much change was apparent on touring torpedo bodies, and these appear to have become more or less standardized, except as regards depth dimensions, which varied considerably.

In one case a sloping cushion had the squab behind it upright, which goes to show that greater supervision is essential, as any master builder would see at a glance that this is incorrect; but men will not use their brains as well as their hands.

Another objectionable feature is the fact that the levers are getting pushed in too close under the steering column, so that the driver would almost need a crank in his leg to enable him to get his foot on the pedals, unless he took an oblique position and sat more or less in the center of the driving seat.

Still another objectionable feature, from the body maker's point of view, is the unnecessarily deep upsweep of the rear of the chassis, as it seriously hampers design of the back quarter, because the seat frame must be kept above the rise, and at the same time accommodation must be provided for a deep cushion, while the overall height of the body must be reduced to a minimum. Thus, the body builder is cramped in all directions.

As a concluding remark we think the automobile engineer would do well to discuss these features that affect the body builder, and try hard to work in better harmony with the latter. If the two could be induced to consult together a much more desirable unit would be the result, and we are sure that in urging this upon the whole industry we are voicing a suggestion that would produce good results. But we are bound to say, in this connection, that from information which has reached us in regard to the matter of standardization of chassis dimensions, it would seem that the deplorable inertness of the body building trade is again strongly in evidence, as with a very few honorable exceptions they have taken no interest whatever in the matter, and the result will be that the chassis makers will either wash their hands of it or settle it to suit their own ideas.

### THE EMPIRE TIRE AND RUBBER CO.

The Empire Tire and Rubber Co., Trenton, N. J., has been incorporated with a capital of \$1,000,000—\$500,000 common stock and \$500,000 preferred stock—to take over the business of the Empire Rubber Mfg. Co. and the Empire Tire Co. The officers of the new company are Charles H. Baker, president; C. Edward Murray, treasurer, and A. Boyd Cornell, secretary.

The Universal Wheel Co., Fort Wayne, Ind., making punctureless auto wheels, has let the contract for the erection of its \$150,000 plant.

### TIMKENS TO MANUFACTURE WORM GEARS

The Timken-Detroit Axle Co. will engage in the manufacture of worm-gear axles. The company has formed an alliance with David Brown & Sons, of Huddersfield, England, whose worm gears long since acquired a reputation. The worms will be handled by a new corporation styled the Timken-David Brown Co., whose plant will join that of the Axle Company. A building is in course of erection and, pending its completion and the manufacture of certain special machinery in England, the gears will be imported. They will be offered in types for both pleasure and commercial vehicles. The first of the gears will be displayed at the New York and Chicago shows in connection with the Timken-Detroit Axle Co.'s exhibit.

The Timken-David Brown worm is of the straight type, in contradistinction to the hour-glass type. In explaining the Timken choice, Chief Engineer Alden says:

"In the straight type the worm itself is cylindrical throughout its entire length and the worm wheel into which it meshes, is concave. In the hour-glass type both the worm and the worm wheel are concave.

"A moment's reflection will show that with the hour-glass type there is just one position in which the worm and wheel can be located with respect to each other in order to gain any advantage from even a supposed greater area of contact of the hour-glass type over the straight type.

"The same amount of reflection will show that with the straight type it is only necessary to locate the worm correctly with the worm wheel in one direction. In the other direction it can stand anywhere, because the worm is cylindrical and uniform in diameter throughout its entire length.

"It is, therefore, evident that the straight type is much less liable to damage through misalignment. With the hour-glass type the slightest misplacement in any direction is fatal. With the straight worm unlimited latitude is possible in one direction.

"It is common practice abroad to make the worm itself of steel and to harden it. This means, of course, that in the process of hardening the tooth form is bound to become distorted to some extent. The straight worm can be ground on its working surface after hardening and this is done by the best foreign makers. I use the term 'grinding' here in the sense of removing the inaccuracies incidental to even the most careful manufacture, and not in the sense of smoothing an inaccurate surface by polishing.

"The hour-glass type of worm can be polished, but it is absolutely impossible to grind it in the proper sense of that term. Consequently, with the straight type of worm, it is possible to produce a geometrically perfect article. The exact opposite is true with the hour-glass type."

Alden admits that certain English car builders have discarded the worm after trying it, but declares that their action is due entirely to the fact that they thought the making of worms a very simple matter and rushed into it without proper precaution.

David Brown & Sons have built worms for all purposes for fifteen years, and in doing so have invented and constructed a number of machines which are radically different from the machinery used by other makers, which was among the several things that appealed to the Timken people.

On the 2,500 London omnibuses, which are being converted to and made silent by worm drive, Brown gears are being utilized, and in this country they are by no means unknown, as it is the gear which has been employed in the Pierce-Arrow heavy truck for the past two years.

"The bevel gear axle will remain with us, perhaps always, certainly for years to come," remarked Chief Engineer Alden in discussing that phase of the subject. "The introduction of the worm drive axle probably will be gradual. It will be a case of the survival of the fittest."

## METHODS IN THE PAINT SHOP

We will take a specific case, that of an all-wood body, and describe in detail how it is treated. Although there is at present an apparent tendency for all-wood bodies to disappear, there are still many coach builders who maintain that they are the best, and that the day of metal-panelled bodies will have its vogue and then die out.

Painful and costly experience has proved conclusively that if shrinkage of the wood takes place after the paint is placed on it, no matter how many coats are put on or what other steps are taken, the impression of the grain of the wood will show through and be as perceptible as if there were only one coat of color and one of varnish. So long as the fibres or grain of the wood contains sap or moisture, they are kept swelled up, but as this moisture must dry out eventually, it follows that the fibres will then contract and come closer together, and the paint, not being sufficiently elastic to contract with it, will give way in places, causing the cracks or splits frequently met with, and which cannot be rectified without burning off and repainting.

The first point is to make sure that the work is absolutely "bone dry." The next step is to run the hand lightly over all the panels and moldings to see whether imperfections or unevenness have been left by the body maker. The hand being very sensitive will detect slight imperfections on a dull surface which would not be noticed by the eye.

All hammer marks, if any can be found, should be planed or scraped out cleanly, for if not attended to at this stage they are bound to show up later notwithstanding the stopping up they may get. The reason for this is simply that the grain of the wood which has been closed or pressed in by concussion of the hammer will, as soon as the slightest dampness occurs, swell out again to its normal position and force out the paint or stopper which may have been put on to level up the indentations. The obvious thing to do, therefore, is to begin by applying the dampness so as to get the wood back to its proper shape, and then when it is thoroughly dry, scrape and paper off smoothly.

Now see that all pin-heads are punched a little below the surface, all greasy spots thoroughly removed, and be careful that any superfluous white lead, left by the body maker about the joints, etc., shall be wiped or scraped off quite clean.

All these preliminaries, simple and trivial as they may perhaps appear, are really most important, for if they are not properly attended to the inevitable result will be that defects will afterwards develop in the finished work.

The next step is to give the work a coat of priming. The composition of priming varies considerably in different shops, so that no hard and fast rule can be laid down about it. For the first coat the following will be found useful, viz., two parts raw linseed oil and one part gold size, well mixed. This should be applied with a bristle brush, taking care that every little crevice and corner is well covered. Then wipe it as dry as possible with waste or old cloths and let it stand over night. The object of this particular first coat is to prevent the paint from chipping when hard, and for this purpose it will be found very effective.

The next priming coat should be composed of genuine white lead, mixed with two parts of best linseed oil and one part of japan. For this also use a bristle brush and brush well on.

On the day following all screw and nail holes should be carefully filled with hard stopper, and all open grain and hard wood glazed with the same, but mixed with japan alone, a flat layer knife being used. Great care should be taken at this stage to do the work well and smoothly, as it will save much time and labor later on.

After standing from 12 to 24 hours—the longer the better—the work should be given a good rubbing off with No. 1½ sandpaper, after which it should receive another coat of rather thinner lead priming.

When this is perfectly dry it should again be lightly sand-

papered and carefully examined to see if any holes have been missed. Any such should be filled with japan stopper, smoothed off with a layer knife.

It must not be assumed that the treatment above described represents the universal practice throughout the trade; indeed, it will be found that in regard to the composition of the priming coats each shop has its own, and in many cases there may be no great fault to find. But the foregoing has been used by a practical coach painter on motor body work with successful results.

Another practical authority gives a slightly different specification for the priming, viz., best wet white lead, mixed with a little vegetable black and thinned with five parts pure turpentine and one part best linseed oil, terebene being used to bind all together in preference to dryers, as it dries harder. In this case it is recommended that four coats of this priming be applied, no difference being made between the coats. Screw and nail holes to be puttied up between the third and fourth coats, and a second putty to be given after the last coat, before applying the first coat of "rough stuff" or filling.

The putty recommended is to be made with dry white lead, bound with gold size only.—Cooper's Vehicle Journal.

## EACH GLUE DIFFERENT

With regard to the amount of glue qualities in it, each glue is a definite proposition—so much water taking capacity and so much strength, and these two qualities are found there in proportions peculiar to that glue. To the one who knows, and is able to solve the problem of gaging glue properties the dimensions of these two properties will be known exactly, and separately for every glue he handles; the advantage of such knowledge is obvious; whoever has it can match these glue qualities, that is—reproduce them, do it exactly, and do it repeatedly.

Glues are defined—yet differing. Covering capacity and flow, strength and set—these differ in all glues; no two are exactly alike. By using what various glues have to offer and by arranging the blend in the proper manner, these differences can be used to good advantage, and what is not found in one glue can be produced by a combination of glues. And when we know how to figure these combinations, these problems can be solved at will, any time, and we can always be sure of the results.

The only trouble is that the ability to do such work and to produce glue grades meeting special conditions—that such ability is rare, only the veterans can tackle such problems and solve them properly.

What counts in glue is strength—joint strength, which again depends on the tensile strength of the glue itself. This strength originates in the raw material and the amount of strength present in the glue will depend on what there was in the stock and how the stock was treated. The better the stock and the better the treatment, the purer the glue—and the more strength will there be in that glue; so universal is this rule that strength and purity may be considered twins, where we find the one we may be sure to find the other. To have access to pure glues is therefore of importance to the glue man: it is like the gold reserve of the banker—a main stay—a safe foundation on which to build, a factor which ought to be present in every glue grade or glue blend. We get now probably purer glues than ever before, that means stronger glues than ever made, and that again means better chances for strong glue work.

## THE CALENDAR SEASON

The first of the new crop to be received is a calendar in colors from the Ledoux Carriage Co., of Montreal. It is the "Huntsman's Wedding," and the bride and groom are merrily off in a coach and four for the wedding jaunt.

## FRENCH POLISHING

On the whole, all kinds of wood are polished in precisely the same manner, the slight difference in treatment not being worth mentioning. The preliminary preparation of such work as is being considered, say a plain, smooth piece of mahogany, walnut, oak, ash, consists of, if necessary, staining, darkening or matching up, after which the actual work of polishing is prepared for by filling in the grain of the wood. After the grain has been filled, the wood must be smoothed down with the finest glass paper. While speaking of this it may be well to say that old paper, which has been used till it is smooth and comparatively useless for ordinary purposes, is for the polisher almost preferable to new. The paper should be used, as in cabinet making, with a cork block, and particular care must always be taken to not rub down corners and edges. Only the lightest papering is required, not more than enough to make the surface smooth if the grain has been raised by moisture. If the wood is rough it must be smoothed down before anything can be done by the polisher, or it will be almost as well to varnish as to attempt to polish it. If a really good polish is wanted the wood must be thoroughly smooth and well paper down beforehand. On that account, therefore, the polisher who is going to work on anything not made by himself will do well to overhaul it as a preliminary proceeding, and paper down any roughness which the maker may have left.

However, reverting to the piece of work after it has been filled in and rendered smooth, all of the filling which has not entered the wood being removed, the first stage of the polishing may be begun. The first application of polish is made and is called *bodying up*. This consists of getting a good body of shellac on the work, and by good body it must not be understood that the film must be a thick one. A good body of polish may rather be explained as consisting of a very thin film, smooth, of equal thickness in all parts, and thoroughly well rubbed in. In fact, to get the desired results and a good, durable final polish, the *bodying-in* process should be repeated several times. It may almost be said that success or failure depends on the way in which the *bodying* is done, for a very slight error, or want of care, may make all the difference imaginable in the result.

The material used is, of course, French polish, which may be either bought ready prepared or may be made by the user. It must suffice to suppose that some of it is at hand in a bottle, from which a few drops can be shaken onto the rubber as required. The rubber consists of a pad of wadding inclosed in a linen or cotton covering. The cotton wadding is dampened with the polish and then covered with the linen, care being taken that on the bottom or face which comes in contact with the wood there is no grease and only one thickness of the material. In order to distribute the polish equally the rubber, which is held in the right hand, should be pressed in the palm of the left. This will cause it to damp the covering and the rubber is then ready for the wood.

The first proceeding should be to get every part of the surface rubbed over with tolerable rapidity, and, of course, a good deal will depend on the shape of the piece how this may best be done. Long, narrow pieces, such as moldings, may just be rubbed along, but for panels or pieces where there is sufficient width, the best plan is to rub across the grain from edge to edge, each smear of the rubber overlapping the previous one. The pressure on the rubber should not be so great as to squeeze any of the polish out; indeed, the rubber should not be so wet that this would be possible, but merely sufficient to moisten the surface of the work. No attempt should be made yet awhile to get a finished look, for the work is barely begun, so that a smeary, dull surface need not cause any disappointment. Till the spirit has evaporated—that is, while the wood is still wet—there will be more gloss than when it has

dried, but it is very different from the final polish. After just slightly coating the wood with polish, the rubber must be worked equally all over till it is dry.

The beginner must be cautioned against a tendency to put more polish on toward the center than near the edges, as, unless especially looked after, the latter are very apt to be partially neglected. While the rubber is fully charged the pressure should be light, and may be gradually increased as it gets dryer.

If the job is left for a time, the rubber should not be allowed to remain on it; indeed, while the rubber is on the wood it should be kept constantly moving. It will also be advisable, for the beginner, at any rate, to slide the rubber on and off the wood instead of plumping it down.

As the rubber dries it will be found to be sticky in moving it over the wood instead of working freely as it does at first. Now, this stickiness must be counteracted, for otherwise the body, instead of being smooth, would become rough and uneven. A little oil must be used in conjunction with the polish, not mixed with it, but applied to the face of the covering. Raw linseed oil is the best for the purpose; only sufficient to lubricate the rubber should be used, and no more, as oil in even the smallest quantity is fatal to a good final polish, and must at a later stage be removed. Were it to remain, a good bright polish could not be obtained. To dip the rubber in oil would be to run considerable risk of taking up too much. A better plan is to moisten the tip of one of the fingers with oil and just touch the face of the rubber with it; even then there is some danger of applying too much. If too little oil is used, of which there is not much danger, the rubber will drag unmistakably, in which case a trifle more oil should be applied, or the surface of the work, instead of being smooth, will have a broken, ridgy appearance. On the other hand, when too much oil is used the surface will be distinctly smeared when rubbed with the finger, and have a too perceptible greasy feel.

On no account should the beginner expect to try to get a varnished appearance or a fine polish with the first *bodying in*. The film of shellac, if all has been properly done, will be almost immeasurably thin and smeary looking. Never mind this, though, if the surface is smooth and uniform, for that is all that can be expected at present.

Now, it is quite true that the *bodying-up* may be continued and the final operation of bringing up the polish by "*spiriting off*," as it is technically called, be proceeded with immediately. To do so, however, will be at the risk, almost the certainty, of the polish not being so durable as it should be. The body or film will sink and become dull after a longer or shorter interval, according to the nature of the wood and the way in which the work has been done. If a polisher wants to do a really fine bit of work which will last, he will keep it by him for days, not continually working on it, but touching it up as occasion requires to renew the body as it sinks. At least a day should intervene between the different *bodyings*, and no harm whatever can result from leaving the work considerably longer.

If the condition of the work after it has stood a time be noticed, it will be remarked that the polish seems to have gone off or perished. This is owing to its having sunk in the wood to a certain extent, notwithstanding the use of a filler. Now, so long as the polish shows any sign of sinking it is hopeless to expect to get a durable finish. Therefore the *bodying-in* process must be continued till it appears that the film of shellac remains without deterioration on the surface.

The number of times which it may be advisable to *body* depends entirely on circumstances. It is impossible to give definite direction on this point, but if a sufficient interval elapses between each to allow of sinkage, four separate appli-

cations may be reckoned as being usually enough for all purposes. It must be understood clearly that the object is not to get the wood thickly coated, so much as to have a film which will not sink. Open-grained woods, such as oak and ash, may require even more than four applications, but fewer will be necessary with the finer kinds.

The previous bodying should be slightly papered down before commencing with the next one, but by no means to such an extent as to rub through to the wood. In many cases the papering is dispensed with, according to the judgment of the polisher as to whether it is necessary or not. If there is the slightest roughness of surface from any cause whatever, it should not be omitted; and in any case, if done with a light hand, it is not open to objection, even if there may be no great advantage.

Although not invariably done, it is not a bad plan to wipe the surface with a rag dampened with warm water before beginning to put a second or subsequent body on the previous one. It removes a good deal of the superfluous oil, besides clearing away any dust which may have settled in the work, and the rubber, when next applied, works more freely than it otherwise would.

As the work progresses the novice will do well to watch it carefully, in order to stop as soon as any irregularity is noticed, for the only thing then to be done is to paper down thoroughly and start afresh with polish. The mishaps which are most likely to occur are an uneven surface, either ridgy or broken and torn looking. The former will most likely be due to the rubber having been overcharged with polish or from having allowed it to remain standing on the work. A torn, rough looking surface will probably be the result of using too little oil, for the rubber, instead of gliding smoothly over the surface, will have a tendency to tear it up. Should the polish come off in pieces or seem to break away, instead of amalgamating with that previously applied, it shows that there has been too much oil on the surface. As these defects may not be apparent in all lights, or when the work is regarded from certain positions, the polisher should move it about so that the light is reflected at various angles.

It will be noticed that some of the polish hardens on the fingers, and it may seem almost unnecessary to remind workers

that the hands should be kept as clean as possible. If the shellac, the solid substance of the polish, thickens or hardens on the hands to any great extent it is apt to chip off and fall on the work, with the inevitable result that this will be blemished. As soap and water, especially if cold, are hardly sufficient to remove incrustations of polish from the fingers, it may be well to know that a little methylated spirit will do so, or ordinary washing soda and hot water.

When the rubber is first applied the pressure should be light, just enough to moisten the surface of the wood. As the rubber gets dryer it may be increased, but at no time should it be hard. When bodying-up, it is essential to success that the rubber should be dried out before more polish is added to it, and whenever this is done take care that the face of the rubber is free from creases or wrinkles. Any of these will certainly tear the surface and leave the body rough and ragged.

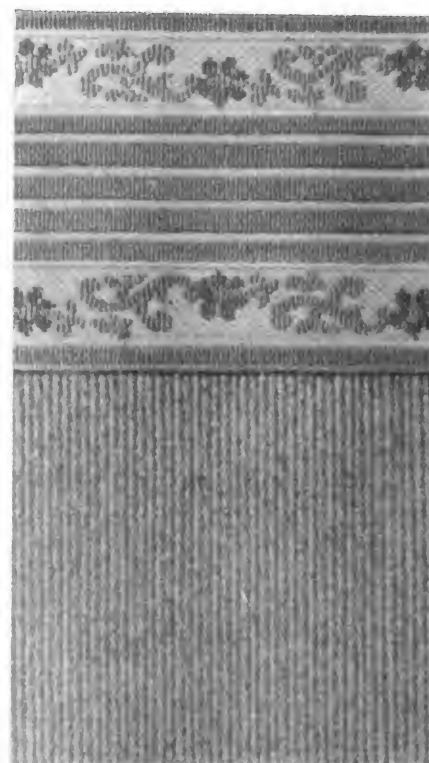
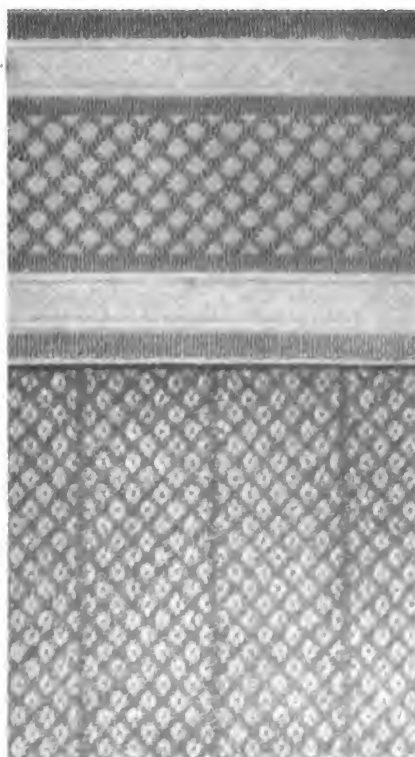
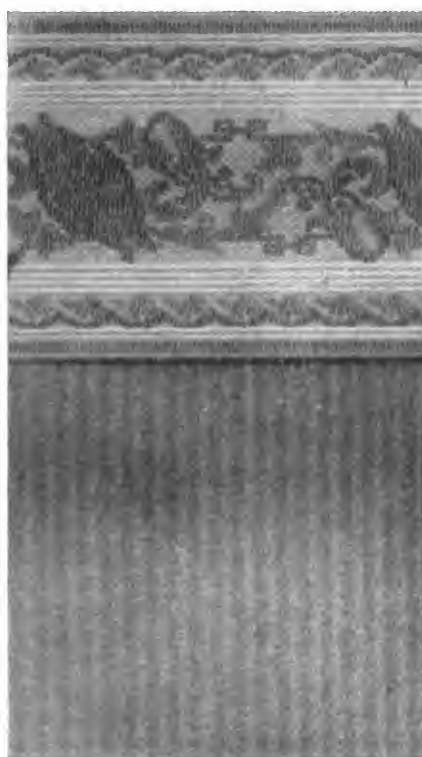
The movement of the rubber should be regular and even, with only a moderate speed, for nothing is gained by scrubbing or working rapidly. Time must be given to the spirit to evaporate before rubbing over the same spot, and a too rapid movement is therefore not advisable.—Wood-Worker.

### NEW COACH LACES

The very handsome designs of coach laces are extracted from the October issue of *Carrosserie Automobile*. It truly remarks that the trimming of the vehicle is a part of the construction that should have great attention because of its importance. A comfortable seat, soft cushion of right incline often clinches the purchase.

Exterior seat leathers, interior cloth is the mandate. Leather is slipping and cold; not wanted inside. Nothing has supplanted the elegances and comfort of cloth. Silks are pretty and eye-catching, and may be used in town vehicles, but out of the question for touring purposes. Crepeline, a mixture of silk and cotton, is used, but though pleasing as to the pale tints, it has little solidity or durability.

The coach laces we illustrate are from a maker of the best French styles.





## ENAMELLING BRASS PARTS

There appears to be a demand for japanned automobile parts, the bright and shiny brass finish having received an adverse verdict. Brass, lacquered, offers a surface entirely negative and repellent to all kinds of ordinary paint brushed on in the ordinary way.

This being the case, the question arises, what is the best method, all things considered, to use in finishing these brass surfaces in paint colors, principally black?

In the first place, an oven must be provided in which to bake the enamel on these small parts, such as lamps, wind shield rails, handles and other attachments. Probably an oven anywhere from four feet to six feet square, or in any shape, but containing about the number of square feet which these four or six feet ones do, will answer the purpose for many of our readers who simply wish to take up the enamelling work on a small scale, and handle only small parts.

Gas as an oven heating medium is to be preferred for substantial reasons, chief among which is the fact that it is not only a safe medium, but a very quick heating one.

Previous to enamelling, the brass should be put through a process of preparation that will not only remove all the dirt and grease, but all the old lacquer.

Enamel cannot be safely baked on a surface carrying a glaze of lacquer applied when the brass parts were polished and made ready for service, and since which time it has become almost as hard as the metal itself.

Where the cleaning and enamelling is to be done on a considerable scale nitric and sulphuric acid dips may be provided, these being the quickest and most thorough methods of removing the old lacquer, but this system is rather expensive to install and maintain.

As a good and efficient substitute make a dip of water and caustic soda in the proportions of five pounds of caustic soda to 20 gallons of water. This caustic soda bath, while removing the lacquer, does not remove the tarnish, so that in case the lacquer is being taken off for the purpose of repolishing and lacquering it is essential that the brass be given a second immersion, this time in a dip of oxalic acid and water, the proportions of which are  $\frac{1}{4}$  pound of oxalic acid and 20 gallons of water. To make the practice plain, first give the brass

a thorough bath in the caustic soda solution, then remove it to the oxalic acid solution, after which remove, wipe dry and polish with some approved metal polish.

In the event of letting the brass parts go in a polished condition they should be given a coat of lacquer as soon as they are cleaned and polished, for upon exposure to the air the brass quickly tarnishes and begins to deteriorate in appearance.

Having stripped the lacquer off by means of the caustic soda solution, it is next a good plan to slightly roughen the surface with No.  $\frac{1}{2}$  sandpaper, at the conclusion of which work it is ready for the baking enamel.

For lamps, wind shields and parts of this class apply as a first coating metal primer or a primer shop mixed and called by the same name. The bought-ready-to-use metal primer, if secured from a standard color house, is usually reliable, and, on the whole, cheaper than the shop made material. Make primer consist of equal parts of raw linseed oil and turpentine stained with enough white lead to give the mixture a baking body. Apply to the surface with a camel's hair brush. Heat the oven to 200 degrees F., and bake the primer for three hours at this temperature.

If the parts are to be finished in black, next apply two coats of black enamel, baking each coat six hours at 180 degrees.

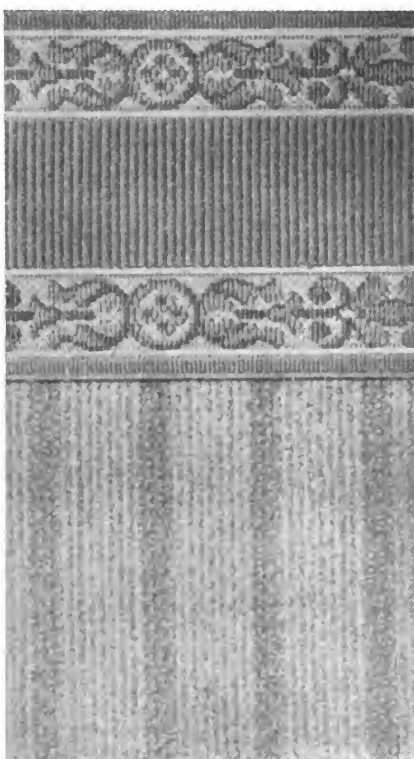
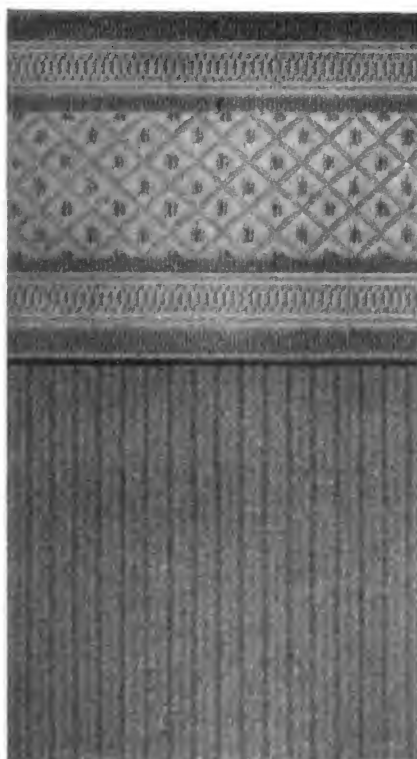
All these parts may, of course, be finished in any desired color, the firms making enamels supplying them in a wide variety of colors and shades.

For larger parts of the car, such as hoods, panels, etc., bake the metal primer on the surface for three hours at 200 degrees. Then tint up a baking surface, or shade it out, as the case may be, to act as a ground color, and with the oven at a temperature of 240 degrees bake for three hours.

Then with No.  $\frac{1}{2}$  sandpaper slick the surface down smooth and fine and apply a coat of the desired enamel.

In this connection it is well to understand that colored enamels, other than black, require less heat to bake them than the black. The black should be baked for from five to six hours at 200 degrees.

Most of the blue enamels bake at 125 degrees, whereas the greens require 140 degrees, and even more. Baking white enamels at a temperature higher than 100 or 110 degrees is likely to throw a dirty yellow shade into the white. Grey enamels, such as are used quite extensively at the present time





may be baked at from 120 to 140 degrees without affecting the quality of the color. Brown enamels are baked at from 125 to 140 degrees, and reds at from 130 to 175 degrees. Yellows should not be baked at more than 125, and a lesser heat is to be preferred. If more than one coat of any of the enamels are applied, rub the last coat of enamel with pumice stone, flour and water, and finish, in the case of good work, with two coats of varnish, baking each coat at 150 degrees for five hours.

### SPOKE MAKERS FILE PROTEST

A complaint against the rates on club turned spokes from points in the territory south of the Potomac and Ohio rivers and from the southwest to points of consumption in Trunk Line territory was filed November 23 with the Interstate Commerce Commission by the Eastern Wheel Manufacturers' Association. It was said that the rates on spokes should not exceed the rates on oak and hickory lumber between the same points. The Alabama & Vicksburg and about 100 other railroads were named defendants to the complaint.

### STANDARDIZATION OF CHASSIS

The body builder knows better than the motor manufacturer that there is a great and unnecessary diversity in the dimensions of the chassis—irritating little differences of an inch or two which prevent, to a large extent, bodies being built for stock, or one body being taken from one chassis and mounted on another; these being facilities which may or may not operate for the future welfare of the trade. Let us take the rough classification such as horse power gives and what do we find? Here are various makes of cars having tracks of 4 ft., 4 ft. 1 in., 4 ft. 1½ in., 4 ft. 2 in., 4 ft. 3 in., 4 ft. 3½ in., 4 ft. 4 in., 4 ft. 4½ in., 4 ft. 5 in., and so on up to 4 ft. 9 in., with one shining example of 4 ft. 7½ in., but no one seems to have thought of odd sixteenths of an inch. Taking the same class of cars one finds that the distance behind the dashboard varies just as much, while often it may be found that a car of lower rating has a more ample body space than one of larger horse power. Now that the scuttle is an understood item on most cars, both cheap and otherwise, the tank has a tendency to have less influence on the design of the body, as an increasing number of open cars are being fitted with the fuel tank under the scuttle paneling, leaving the seat space free so that the cushions may be as low as desired. If a rear tank is used its only disadvantage from the designer's point of view is leaving a clear space for the filler, but even then many builders have added an extension so that the body work can be lengthened. Perhaps the most confusion exists with regard to the position of the levers. Not only do chassis widths vary, but two chassis having the same widths may have different "stand out" of levers, which may be of any length, rake, or arc of movement which the fancy of the engineer may decide. Standardization would be easier if each chassis manufacturer did not make most of the component parts. If control, axle, steering, and other units were bought from a house devoted to these specialties then matters might be easier, but in that case the maker or the assembler would be complaining that his productions were losing their individuality. Standardization is a fine thing where cheapness is concerned, but it employs less labor than the system now in vogue. The point to consider is whether the seller gets remuneration for designing everything himself. The motor body builder might rejoice if a Napier, Austin, Daimler, Crossley, and so on, were all of the same size as regards chassis dimensions, but on the other hand he might find that such a state of affairs was made an excuse for lowering prices. It is nice to be able to lose a nut from a cape cart hood and get another which is sure to fit at the next shop, but when one is dealing in articles which run into three figures perhaps after all a little variety is a stimulus to business in many directions, although there is ample room for cutting down many of the bewildering display of minute differences in meas-

urements and still leave room for the individuality of the body work. Should there be more of a sameness between one chassis and another, does the accessory manufacturer and carriage builder propose to give himself a gentle dose of the same medicine? It has been suggested, nearly 25 years ago, that the builders of horse carriages might agree as to lamp sockets, brake blocks, and axle arms, but we do not think it led to much uniformity. Variety is the spice of life, but it is possible to have too much of a good thing, and no doubt this is just the position which has been arrived at in the designing of chassis for the reception of the body.—Automobile and Carriage Builders' Journal.

### CHARMS OF FINISH

A limousine finished in varnished walnut with a crimson groundwork for those panels covered with the cane makes a rich and charming effect. Another limousine with cane panels on a black ground, with a fine picking-out line of light blue on the black mouldings and top panels. Most of the color schemes at the Olympia show did credit to the French coach builders' well known taste, unobtrusive combinations of browns, dull greens and blues, and greys, being seen on all sides among the more orthodox coach colors. On the boot of more than one two-seater were bevelled corners running from the body to the back bottom side, tapered off towards the latter point. These bevels were finished in varnished wood, giving them the appearance of being veritably cut out of the solid block.

Closed bodies form a very important class in French coach building, a decided preference being shown for them. To achieve this lightness of construction, among other devices, leather is frequently used in place of wood or metal. The firm of Henri Labourdette adopts this practice rather extensively.

These leather quarters are used on vehicles, and leather covered enclosed dashes are frequent. Another place where this material is used is between the dash top and the wind screen. French coach builders have in the past extensively used a type of wind screen having a glass upper panel supported by side standards, with a limp leather between its bottom side and the dash top, taking the place of the lower glass panel. This type of screen seems to have lost its popularity, but in its place a piece of leather is used tightly stretched on a metal frame. This sailed panel has a very good appearance and must necessarily be much lighter than glass. On one car a screen fixed above a domed dash, the glass jointed at the top and swinging outwards, occupied about two-thirds of the space between the canopy and the dash. The remaining space was occupied by a leather fall fastened at its top edge to a flat brass rod, the side supports of the wind screen being fixed on to them by means of clamps, tightened by butterfly headed screws. A fence rail ran along the back of this rod, against which the wind screen shut. The bottom edge of this leather was shaped to follow the dome of the dash, and was kept in position by straps, one at each end, which fastened to the bottom of the screen supports.

### ILLINOIS ASSOCIATION TO ORGANIZE LOCAL CLUBS

A meeting of the directors of the Illinois Retail Implement and Vehicle Dealers' Association was held at Bloomington, December 18. The meeting was called for the purpose of considering ways and means for increasing the membership and interest in the organization. A committee was appointed to engage a state organizer to call on all of the dealers in Illinois and urge them to become members, also to assist them in organizing local clubs. Wm. Morris, Decatur, vice-president of the association, is chairman of this committee. Plans were discussed for obtaining funds to promote the work, and arrangements were made to investigate several bills of interest to dealers that are expected to be introduced in the Illinois legislature at the coming session.

## AUTOGENOUS WELDING

The new methods in the smith shop include gas welding by the autogenous process. Some may yet be in arrears as to the news of it, so a description by an expert should be grateful to all on the lookout for the good things only recently very new. F. A. Saylor, in *Electrician*, is the writer of what follows:

Autogenous welding is the uniting of metals by heat without the use of flux or compression or additional metal. It is, in fact, a self-produced union and the term as used is a misnomer. What is known as autogenous welding should properly be called fusion welding. The use of the word welding is not altogether correct either, as that commonly implies the use of force, as hammering or compression, whereas it is more on the order of casting as the metal is united by flowing as in a mold.

This welding has been in use for a long time by means of oxy-gas and oxy-hydrogen, but has been limited in application until the development of the oxy-acetylene process placed it on a commercial basis and caused a rapid improvement in methods and extended the range of work.

This is a day of rapid change and what is accepted as new today is superseded tomorrow by something superior, and the old tool or method is consigned to history: so, as the oxy-gas and oxy-hydrogen processes have been superseded by the oxy-acetylene, we will discard them and consider only the latter.

**Apparatus.**—The apparatus consists of three parts: a torch, a tank containing oxygen and a tank containing acetylene, or an acetylene generator. The torch is the most important and vital portion, as it is the thing of all others upon which success finally depends. Three kinds of torches are in use, known as the high pressure, medium pressure and low pressure, according to the condition under which the acetylene is supplied.

The high pressure torch is not used in the United States and the medium pressure torch is commonly known in this country as the high pressure because one of still higher pressure was never introduced.

The low pressure torch uses acetylene at practically no pressure depending on the injector action of a jet of oxygen to draw in the acetylene.

The medium pressure torch mixes the gases under pressure, and it is claimed that a more regular and homogenous mixture is attained with less danger of change and of flash-back.

The oxygen is generated by any one of the numerous commercial methods, such as the potassium chlorate and manganese dioxide, bleach powder, liquid air, barium oxide and many others, and is compressed in tanks by means of a compressor, or by force of generation. These tanks are made to hold, as a rule, 100 feet of gas ranging in pressure from 250 to 1,800 pounds, according to size.

The acetylene is supplied compressed in tanks or from a generator.

This gas cannot be safely compressed above 30 pounds pressure, consequently it was necessary to find some medium whereby it could be safely handled. After considerable experiment it was found that acetone, a wood tar distillate, had the property of absorbing 25 volumes of acetylene for every atmosphere of pressure and it is possible to dissolve 125 feet of gas and place it in a receptacle 10 inches in diameter and 30 inches long. The dissolved acetylene tanks are filled with disks of asbestos, or other absorbent material saturated with acetone and the gas is pumped in till the pressure gauge shows that the required amount has been reached. These tanks can then be safely handled and form a convenient method of supplying the gas in places where a generator is not required or impossible to use.

The torches use the gas at varying pressures depending upon the size of the work to be done, and, as the tanks are compressed to a very much higher pressure than is used at the torch, reducing valves are attached to cut the tank pressure down to that needed by the torch. As this pressure varies, the reducing valves are designed so that the pressure of the gas delivered at the torch can be increased from zero to the highest amount necessary.

**Method of Use.**—The torch in its simplest form consists of two pipes, joined at their extremities into a chamber where the gas is mixed and from which it flows as a mixture to be ignited. The tube containing the acetylene is provided with screens or a packing of some porous material to prevent flash-back, but the oxygen tube is unobstructed in any way. In operating the torch the oxygen tube is connected with the tank through the reducing valve and the acetylene tube with the generator or dissolved acetylene tank in the same way. The acetylene is then turned on and lighted at the nozzle of the torch. Pressure is adjusted until little or no smoke appears and then the oxygen is admitted. As soon as the oxygen reaches the nozzle a change takes place in the appearance of the flame; from a yellow it turns to a blinding bright white. As the pressure increases the flame divides, showing a ragged core of white and an outside envelope of yellow. Increase the pressure further and gradually the inside cone takes a sharply defined outline, oval in shape and of very small length and diameter. Surrounding it is a large cone of a more yellowish hue but which is clearly separated from the inner flame. The inside flame is the working portion and the outside envelope, while it is of importance inasmuch as it protects the weld against oxidation, is not of great value. The heat derived from this flame is about 6,300 degrees, which is 2,000 degrees higher than that attained by the oxy-hydrogen torch and slightly less than that of the electric arc.

**Practical Uses.**—The process has been used extensively by pipe manufacturers in making up manifolds, headers, etc., and in repairing split and broken pipe; also for making up long sections without screw or flanged joints. Boiler manufacturers are using it extensively in making up range boilers and in repairing work, and sheet metal workers are changing the design of a great deal of their work to allow of its use. Many plants are putting it into use as a repair tool in reclaiming broken and damaged castings, while steel casting foundries are finding it invaluable in reclaiming defective work.

**Cost of Operation.**—The cost of operation varies as the size of the torch or tip increases. More gas is used with the large sizes than with the small and labor being a fixed charge the cost of operation depends upon the consumption of the gases. On an average the cost of operation would be from 1 cent a foot for 1/32 inch sheet iron upward to 40 cents per foot for 1/2 inch steel, taking labor at 30 cents per hour. For cast iron these figures would have to be reduced and increased for copper.

**Cost of Apparatus.**—The apparatus ranges in cost from \$300 to \$2,000 according to the type and size and dependent upon the installation of an oxygen generating plant; but the average price for a unit plant, consisting of acetylene generator, two oxygen tanks, torch, hose, valve, gauges, etc., would be about \$500.

**Operators.**—To successfully operate a plant requires some knowledge and skill which are attained only by experience. An operator requires a steady hand and wide knowledge of the effect of contraction and expansion, if he intends to go into the general repair business; but where the work is confined to restricted lines, such as sheet steel or pipe work less

knowledge is necessary, but like everything else experience must be had before success is attained.

Accidents.—Comparatively few accidents have occurred since the apparatus has been introduced into this country, and without exception they have been caused by carelessness or ignorance and have usually resulted in bringing fire too close to the acetylene generator. Now acetylene forms an explosive mixture with oxygen and the range is very great, from about 3 per cent. to 38 per cent., so great care should be exercised in handling it. However, everything being taken into consideration there is no doubt but that the autogenous welding process has come to stay and is a very valuable addition to the tools we have at our command.

### CASEHARDENING STEEL

The process of casehardening is founded upon the fact that when iron or steel is heated up to and beyond a certain temperature in contact with carbonaceous matter the iron or steel absorbs or combines with such a proportion of the carbon as to convert it from a mild steel or a steel of soft character into that of a hard one. It is, in other words, a stopping short of the old method of cementation when the action has only taken place upon the outer portion of the section of steel or bars which are being acted upon.

The term "casehardening" naturally implies the hardening of the skin of an article, and in order to fully understand the process and its object we must briefly consider the facts and laws upon which it is founded.

Carbon has a very great affinity for iron and combines with it at all temperatures above a faint red heat. Steel therefore consists of iron with carbon; carbon being present in a greater or less percentage according as the nature and properties of the particular steel require. The proportion of the carbon content depends, of course, to a great extent on the purpose for which the steel is required, and its percentage is to a large extent definitely governed by definite laws—the laws of chemical combination. When iron has absorbed in round number 90 per cent. carbon, that iron is then known as saturated steel, which means that the percentage of carbon relatively to the percentage of iron has made a definite chemical compound, the carbide of iron.

In most cases the object of casehardening is to get a hard surface to resist wear; wear is produced by pressure, and to resist this pressure, strength is required; therefore, for most work, such as crankshafts, ballraces, gears, etc., mechanical strength is as necessary as a hard surface; for this reason the steel employed should be very low in carbon in order to provide the necessary toughness. The case on a piece of work should be of at least 90 per cent. carbon, otherwise it will not harden "glass hard," and if the packing material will not give a case of this quality it is of little value.

Casehardening is by no means a modern process. Results are governed by five factors: First, the nature of the steel; second, the nature of the carbonizing material; third, the temperature of the carbonizing furnace; fourth, the time the piece is submitted to the carbonizing process and, fifth, the heat treatment which follows carbonizing.

From the five variables present in the casehardening process we have selected three: The nature of the steel in our case being restricted to the carbon content, time and temperature.

Generally speaking, the lowest carbon steel on the market runs about 15 per cent.; this was selected as our lowest limit. 35 per cent. was chosen as the upper limit. For the purpose of determining an intermediate point between these limits a steel of 25 per cent. carbon was taken.

Three periods of time, three, five and seven hours in duration was selected for each change of carbon and temperature, the length of the period being reckoned from the time the pot became heated through and up to the temperature of each respective test.

The best casehardening temperature seems to be between 1,500 deg. F. and 1,800 deg. F.

This combination of three different percentages of carbon, three lengths of time and four different temperatures gave us thirty-six separate conditions of casehardening. To maintain these conditions with the minimum number of heats, the hardening pot contained the three different steels, and for each temperature the tests were run for the various lengths of time.

Practice favors ground bone as a packing material. What we were to determine was the depth of effective hardness, regardless of the other qualities of the treated steel.

The curves of depth of hardness against temperature for five hours show a regular curve; the 15-pt. and 25-pt. curves being almost coincident; the 35-pt. curve being nearly parallel to the others, but showing a greater depth throughout.

The three curves for the seven-hour test are much similar to the five-hour test, but are steeper; the 25-pt. steel taking the deepest case; the 35-pt. curve falling below the others.

It will be seen that the rate of penetration increases very rapidly with the higher temperatures, and the points with but few exceptions form definite curves.

Curves have been plotted showing the relation between depth of effective hardness and time for the different temperatures. At 1,500 deg. F. and 1,600 deg. F. the curves approximate straight lines with very little slope; showing that at low temperatures the time has very little effect on the depth.

At 1,800 deg. F. and 1,950 deg. F. the 15-pt. and 25-pt. curves show a greater rate of penetration; the curves at 1,950 deg. F. having by far the greater slope. In both the 1,800 deg. F. and 1,950 deg. F. tests the 35-pt. carbon gives a reverse slope; the three-hour test showing a deeper effective hardness than the seven-hour test. At present we are at a loss to explain this, since it appears contrary to the appearance of the fractures; yet both the tests at high temperature show the same results.

Duplicate pieces from each test were hardened and broken. These fractures have been grouped and photographed for comparison. The depth of cementation in each case seems to be consistent with the file test, with the exception of the 35-pt. carbon steel. In general, however, the case appears from the fracture to be deeper than that determined by the filing test.

Those pieces treated at the lower temperatures were broken with difficulty, and the fractures of the low carbon steel showed a tendency to be fibrous, the case being quite distinct from the core; while with the 25 and 35-pt. carbon at the low temperatures the core was much finer and rather crystalline, with less destruction between the core and the case.

At the higher temperatures the pieces broke brittle and showed a coarse, very crystalline structure; the carbonized ring as a rule being clearly distinct from the core.

In our opinion, says American Blacksmith, the best results can be obtained at a minimum cost for fuel by carbonizing at a temperature between 1,900 deg. F. and 2,000 deg. F. and regulating the time to get the proper depth. Cast-iron boxes will hardly stand this temperature. This heat, as we have found, weakens the core, but this difficulty can be overcome by heating the steel up to about 1,350 deg. F., cooling slowly and then hardening at 1,400 deg. F.

It is a known fact that the higher the carbon content in steel the lower is the point of decalcification, and inasmuch as many of our pieces hardened at 1,450 deg. F. showed a coarse fracture of the carbonized section, and as it was possible to harden the case below 1,400 deg. F., it was concluded that the converted steel was of a high per cent. of carbon.

### MR. DODD PRESIDES OVER SALES MANAGERS

J. Ellis Dodd, sales manager for the Herschel Mfg. Co., of Peoria, Ill., was made president of the sales managers of the National Implement and Vehicle Association, at Chicago, December 19.

## THE PULL FROM THE AXLE FALLACY

Mr. Charles Holmes, a veteran carriage builder of England, in discussing the question of draught in vehicles, says: "In ordinary English harness the horse pulls the carriage by means of traces which are fastened on to the hames of the collar. The height of this end of the traces depends upon the height of the horse. If a straight line is drawn from this point of the hames to the hind axle we may call this the line of draught, and for light carriages the trace should be in this line."

In regard to carts Mr. Holmes is silent, though by implication his teaching is that what is right for a carriage applies with equal force to a two-wheeler, and he may therefore be classed as an advocate of the "pull from the axle theory," which, though widely held, is rarely practiced.

We regret that Mr. Holmes has not seen his way to pricking this bubble, which has led to serious defects in the design of much otherwise fine carriage work, says a writer in *Australian Coachbuilder*.

The underlying idea in the theory is that an obstacle on the road puts a momentary stress on the trace, which is best overcome by a direct tug at the axle. This idea is fallacious. The fact is, a moving vehicle is a reservoir of energy. When one of its wheels strikes an obstacle some of the stored energy is used in lifting it over the obstacle. This results in a reduction of speed. The stress on the trace is due to the effort of the horse to replace the lost energy. Most of the obstacles met by a moving vehicle, if taken individually, would be mounted even if there were no trace. A succession of them would, of course, bring the vehicle to a standstill.

If the center of the wheel (on a side elevation) is the center of gravity of the vehicle, then the axle is the proper position to connect with the horse, but only because of that. A horse, for the purpose of considering the problem, is a body having energy of motion, part of which it is required to transfer to a vehicle. If a horse's shape were circular like a wheel or spherical, and it was required to use him to draw a wheel, the obviously correct line of draught would be one connecting centers of gravity of horse and wheel. The same principle applies to horses as they are and vehicles as we make them.

To show the true line of draught on a side elevation of horse and vehicle we must, if we connect with the horse's collar, draw a straight line which will pass through the center of gravity of the horse to a point on the vehicle through which it will, if produced, reach the center of gravity of the vehicle. If this be accepted, we get an idea of the principle which decides the best height for wheels. It is such a height as will place the centers of gravity of horse and normally loaded vehicle in a line parallel with the road.

## THE MODERN CARRIAGE SMITH SHOP

There are many smiths working in the carriage shops who have never seen a modern smith shop where shop cleanliness and order prevails, and where all manner of labor-saving appliances are in use. In such a shop, old time drudgery is unknown, and everything that can further the comfort and efficiency of the mechanic is utilized.

Heating and ventilating are two important features. Comparatively few carriage smith shops are heated, and all who work in them know how necessary it is that they should be, especially on cold winter days. Mechanics can do more and better work when comfortable. Where a number of men work in a shop the amount lost in their labor would pay for proper heating.

Ventilation is as important as heating. Those who work on either the lower or upper floors realize what atmospheric impurities are caused in the morning, on the starting of the fires, and in fact, throughout the day, sometimes causing sickness, even, to the workmen at times.

Appliances in smiths' shops vary in all carriage shops. When new shops are built economy, through the use of labor-saving

appliances, is one of the main objects in purchase of equipments, just as it in the wood shop. Old methods of tiring wheels have been supplanted by new. The writer remembers well the time when tires were set 3 by  $\frac{3}{4}$  inch how long it took to set one, how many hands it took to put them on, and how badly the work was done. The forge could never equally heat the tire the entire circumference. In the center of the fire it was red hot, while on each side only partly hot, and before the tire was heated all around it became cooled before the rest was heated. When such a heated tire was put on a wheel it had to be forced on, not "shrunk."

By this method felloes were often split. Later on, the tires were heated by building a fire around the four or eight tires, or in a furnace, which was a great improvement. The work was well done and the wheels were not injured in the least, except from the soaking with water, which is objectionable. All new wheels were primed before tiring, consequently the water had very little effect on the wheels.

The recent improvements and inventions have changed all this. West's power tire setters, now used in all large carriage shops, do one hour's work, as measured by old processes, in from three to five minutes. They reduce labor and expense and do superior work. Drilling the tires has taken a great deal of time, even if the drills are run by machinery. The punching has been found more satisfactory and all sizes of holes are punched in a very short time, and the rest of the iron is not injured in the least by the operation. Not long ago most of the punches were steam punches, but quite recently punches have been on the market which punch  $\frac{3}{4}$  or 1 inch iron, or  $\frac{5}{8}$  inch steel in nearly the same time as the steam punch, and which are operated by pneumatic power which requires comparatively little exertion.

While advances and improvements have been made in punches, the drills have been improved. There is the upright hand-power drill with the iron back, the upright hand and power types with emery wheel, cone pulley and countershaft; hand-power upright types with automatic feed; the plain hand-feed drill, and power drills with back feed. If we look in another direction we discover a machine, simple in its construction, which does a great amount and a great variety of work. It is the combined punch, shear and bar cutter, one of the greatest labor-saving machines in the smith shop. There is also the continuous shear and the independent punch, with hand lever. Next to the forges are the tire upsetters, made in four sizes, from the smallest to  $\frac{7}{8}$  inch thick and  $4\frac{1}{2}$  inches wide. On these tire upsetters the heavy axles are upset also.

## BRUSHES AND BRISTLES

There has been a decided change of fashion in paint brushes during the last few years, due, no doubt, to the advent of so many specialized articles of enamel-paint type on the market, and we can see the "flat" brush ousting the "round" and "oval" varieties, and the "black" bristle again gaining favor, where once the white bristle was preeminent. It is evident that these specialized materials require special tools for their proper manipulation, and it is just as evident that the old style of brush left much to be desired. In what way then does the "full, flat, black bristle brush," so much advocated by the manufacturers themselves fulfill the desired conditions? First, let us see what these conditions are. It must be apparent to all users of enamels, japans, enamel paints, and even some of the ready-mixed paint, that they are more difficult to spread than either ordinary paint or varnish. The first requirement then is strength or "spring" in the bristles. Without this you cannot hope to spread the material into place, and leave it before it reaches its setting point, after which it is, of course, unworkable with any kind of brush.

The next most important point is "fineness" of bristle. Whether you are applying an undercoat or a finishing, whether it be a "flowing" or a "non-flowing" material, it is perfectly obvious that the finer the bristle the finer the result. I am

convinced that a good flat black bristle brush combines these qualities to a greater extent than white bristle brushes of any design. I say a good brush advisedly, for no one realizes more than I do the fact that a brush is not necessarily good because it is flat and has black bristles. Many of them are worse than useless, and I will try and indicate what a good specimen should be like.

The bristles should be straight, and of a silky softness. A brush which is two inches in width should be at least half an inch in thickness—and all bristles—without any center core. The bristles should be shaped to a chisel edge, and not ground on the grindstone.

One great advantage of such a brush, says The Decorator, is that it can be put straight away into enamel or varnish without the preliminary breaking in which white bristles require, and which is always more or less a source of dirt and grit getting into the stock. It is recommended that these black bristle brushes be kept in turps or turps and oil when not in use. When treated in this way they retain their original spring, and do not get flabby as brushes do which are kept in water. Then, as to a comparison between the wearing properties of black bristles and white ones, I find that in varnish and enamel a black bristle will wear as long as white, but in paint, which is more of a gritty nature, they do not wear so well. When we take into consideration, therefore, the fact that the black bristle averages some 15 per cent. cheaper than the white, we see at once that the difference is more than balanced.

I have covered, and have seen other men cover larger surfaces, single handed, with a four inch flat brush, than would be possible with a pound brush, using enamel paint, and there was a greater solidity in the finish also. The flat brush is of much less weight, and the absence of binding makes it cleaner. I am convinced that those tradesmen who still retain their prejudice against the black bristles have, if they have tried it at all, got hold of a very poor sample. I would not assert that finality has been reached in the manufacture of the black bristle brush, or even go so far as to say that the ideal brush is yet on the market, but I believe that even now it has reached a stage which, for present day needs, places it above all others.

### FORMAL OPENING OF GOODYEAR TIRE & RUBBER CO.'S NEW OFFICES

The new offices of the Goodyear Tire & Rubber Co., at Akron, O., were formally opened with a banquet December 7. Fully 700 persons attended the banquet and dance in the new office dining room. F. A. Seiberling, president of the company, acting as toastmaster, thanked his employes for their loyalty in helping to build up the great industry. He called attention to the fact that the office force of the Goodyear Company in 1899 consisted of but seven people, while at present it consists of 700. Employes from now on can secure meals at the restaurant of the plant. A souvenir program of the occasion consisting of a booklet, well illustrated, giving an interesting account of the growth of the Goodyear Company was given to each person attending.

There are 57,000 feet of floor space in the combined offices of the new and old plants. Although at the time the new office building was planned, it was believed to be ample for years to come, at present nearly every nook and cranny has been occupied.

The gross amount of business done for the fiscal year now ending was \$25,232,207.03. The first year's gross business of the company, summarized under date of September 1, 1899, was \$527,080.66.

The first Goodyear office force, back in 1898, upon the organization of the company, consisted of two persons. They were Miss Clara Bingham, still with the Goodyear in a position of trust and responsibility, and Miss Cleveland, now the wife of Dr. Henninger, of Akron. They came as stenographers.

In January, 1899, came W. E. Palmer, now assistant treasurer of the company. Mr. Palmer's duties included those of book-keeper, time keeper and bill clerk. Walter Sheill, who later left the company's employ, was collector. C. W. Seiberling, now vice-president, was purchasing agent and sales manager. F. A. Seiberling, now president, was general manager of the company. C. W. Seiberling, and J. A. Burrows, now of Denver, were the sales force. Thus in the first year the entire managerial, office and sales force totaled seven persons. In the factory less than 100 persons were employed at first. There were but two classes of products, bicycle tires and solid carriage tires.

At the recent annual meeting the old board of directors were reelected, as follows: F. A. Seiberling, Chas. W. Seiberling, H. B. Manton, J. P. Loomis, P. W. Litchfield, G. M. Stadelman and F. H. Adams. Officers were elected as follows: F. A. Seiberling, president; C. W. Seiberling, vice-president; F. H. Adams, treasurer; W. E. Palmer, assistant treasurer; G. M. Stadelman, secretary, and P. W. Litchfield, factory manager.

Frank Seiberling, president of the Goodyear Tire & Rubber Co., has given a contract to construct houses on land which he has purchased in the vicinity of the company's plant. It is the plan at the present time to start the foundations as soon as the weather will permit and have a large number ready for occupancy early in the summer. In the entire lot there will be 500 new homes. These will be sold to employes of the company at cost. It is not the plan of the company to make anything on the proposition but to bring within reach of all its employes homes at reasonable prices. The houses will be modern in all respects, and will add greatly to the appearance of fast growing East Akron.

### CARRIAGE TOP DRESSING FORMULA

Carriage tops that have faded and become gray can be restored by washing with a solution composed of:

Nutgalls .....	4 ounces
Logwood .....	1 ounce
Copperas .....	1 ounce
Clean iron filings.....	1 ounce
Sumach berries .....	1 ounce

Put all but the iron filings and copperas in 1 quart of the best white wine vinegar, and heat nearly to the boiling point; then add the copperas and iron filings. Let stand for 24 hours, and strain off the liquid; apply with a sponge. This is equally good for restoring black cloths.

2. Old, Faded and Cracked Carriage Tops—The top should be washed with warm water and thoroughly dried; then with a sponge give one or two coats of the formula as given above, as may be required by the condition of the top. When dry, apply one coat of lampblack, using oil or varnish enough to give a gloss. Moss off when dry and give a coat of drop black mixed a little quicker than the first coat. Follow up with a little coach Japan in it.

3. Restoring Enamel Leather Carriage Tops—First wash the top with soft water and castile or crown soap to remove dust, dirt, etc., using a sponge, and then scrub with a moderately stiff brush, cleanse with clean water and dry with chamois leather. Never apply any kind of oil or top dressing without first cleaning the leather.

### LYE FOR WASHING CAR EXTERIORS

One pound of caustic soda to 1 gallon of water makes a solution about 8 degrees Baume's alkali hydrometer. To wash paint or varnish, 1 teacupful of this solution to a bucket of water for ordinary work. Apply the alkali with a brush, a small surface at a time, and rinse off with clean water as quickly as possible to prevent the lye cutting the paint or varnish. Use the lye strong enough to turn the grease on the work into soap, then rinse the soap and dirt off with water and sponge. Care must be taken to leave no runs or dripping.



## EVOLUTION OF THE TAXI-CAB

The advent of the motor cab is one of the most beneficial aspects of the horseless vehicle.

Formerly the weight of cabs was round about 3,500 pounds, of which the accumulators weighed about 1,400 pounds, being slung under the body, a position which gave the vehicles a very heavy appearance. The vibration set up in traveling proved fatal to the accumulators, although every endeavor was made to prevent the jolting effects of road surfaces reaching them.

In June, 1898, the French Automobile Club instituted a competition extending over twelve days. The regulations set out that the vehicles had to travel a distance of 36 miles per day in and about Paris. The judging committee had a special instruction to pay particular regard to the cost of operation. The rules were set out in accordance with the police regulations, and in Paris the speed was not to exceed twelve miles per hour.

Twenty-five vehicles were entered, fourteen being electrically driven. Twelve vehicles only faced the actual trials, only one being a gasoline motor vehicle, made by Peugeot. The reason for the withdrawal of the gasoline cars was on account of the statement made by the Paris cab companies, who declared that after exhaustively testing various type of vehicles propelled by gasoline, they had been forced to the conclusion that on account of the heat, smell, and vibration, especially in the hands of unskilled drivers, such vehicles were quite unsuitable for hackney carriages. The trial, therefore, practically resolved itself into a trial of electric vehicles, although the Peugeot gasoline cab ran through the trials with perfect regularity.

The consumption of electric current varied from 9.73 kilowatt hours to nearly 14 kilowatt hours in different vehicles, and, based on a cost of .30 francs per kilowatt hour, the cost amounted to 2½ to 3½ francs per 60 kilometres. Regarding the gasoline cab, the minimum consumption was 13 litres per day, costing .60 franc per litre. Thus the journey cost \$1.56 for 60 kilometres, being practically 4 cents per mile.

The cost of repairs to electric accumulators was estimated to be three francs per day, which, added to the cost of energy, gives a cost of about six francs per day under those two heads.

It is interesting at this stage to review the opinion of M. Bixio, at that time president of the Compagnie Generale des Voitures. He stated, in October, 1897, that the petroleum car has no chance at all. "As soon as we get the electric car ready, the petroleum automobile will be seen no more. For several reasons the latter cannot compete with the former, principally because it is not strong enough, that is, it cannot be relied upon to ascend an incline. I quite admit that at the present time there is an enormous demand for the petroleum autocar, and the manufacturers are, I am told, asking from 15 to 18 months for the execution of an order. But it is wealthy classes and amateurs who are using it. They obtain amusement from it just as a child is amused by a new toy. But I am of opinion," concluded M. Bixio, "that neither the electric nor petroleum car will ever come into universal use. Automobolism is only likely to replace horses in public conveyances, and in the case of delivery carts and wagons. The wealthy class will always keep to their horses. A wealthy man will never be so proud of his automobile as he is of his well-groomed thoroughbreds."

How strange these remarks read after the lapse of time. The electric vehicle has proved to be a complete failure for public service vehicles, and the gasoline car has established itself universally, both as the vehicle for the "idle" rich and the "busy" poor.

The Automobile Club of France instituted further motor cab trials in the year 1899. In these trials gasoline cars were represented by the Peugeot and Panhard and Levassor, and the

electric cars by Jeantaud, Krieger, and Benatzy. The cars were put through the same course as in the previous year.

The weight of the Panhard Levassor was 1,300 kilos with load, and the weight of the Peugeot 1,290 kilos. The maximum speed obtained on the flat was 25.05 kilometres per hour, and on an incline of 8.2 per cent. 6.44 kilometres. The average speed obtained on the Paris streets was 18.5 kilometres.

In 1898 the consumption of the Peugeot vehicle was .261 litre per kilometre traveled, and in 1899 the consumption of the Panhard vehicle worked out at .165 litre. The costs per day were given out as follows: General expenses, 16.38 fr.; fuel, 5.95; lubricating oil, .45 fr.; total, 22.78 fr.

Although the average speed of the electric cars on the Paris streets was not as high as that of the gasoline, yet on the hill-climbing trials a considerably higher speed was obtained, in some cases over 50 per cent.

The total weight of a Krieger victoria was 1,700 kilos, made up as follows: Frame, wheels, gear, etc., 892; accumulators, 458; driver, 70; and load, 280 kilos.

And the daily expenses were worked out as follows:

	Francs.
General costs, lubrication, etc.....	14.57
Maintenance of accumulators.....	5
Motive power .....	1.4
Total .....	20.97

In this figure is included 5½ francs per day for the driver, 2 francs only being allowed for pneumatic tires.

Similar calculations in connection with gasoline vehicles were worked out, giving the cost per day of these at 2.78 francs, the chief difference being by reason of the greater cost of the fuel, namely, 5.95 francs with the gasoline vehicle, as against 1.4 francs with electric vehicles, the cost of the current being taken at 12 centimes per kilowatt hour.

### BELT TROUBLES IN WOOD SHOP

I am often asked, "Don't you ever have any trouble with your belting?" and I can only say in reply, "No, none to speak of," and this is a question I wish to discuss with mill foremen and those that take care of the belting of a wood-working plant.

In the first place, it is the cheapest at all times to buy the best belting available for the place it is to be used. We will first take up the lacing, which is very important, and what I find most satisfactory. In over twenty-five years' experience I have tried nearly all kinds of lacing imaginable, but during the last ten years have come to the conclusion that wire lacing is best for all kinds of belting. To illustrate, let me tell about how wire lacing should be used.

This lace should be made by starting at the center and working each way. Seven time the width of the belt is the length for the wire to be cut, and nine to ten times in double or six to eight-ply belting. Now, in putting in this lacing, it should be pulled up good and tight every time it is put through the hole, but never caught with the pliers only at the extreme end, for if caught at any other place it will cause it to break easier. Then it should be hammered down carefully, but never use a hammer with sharp edges on it. If it is a belt that does not run under a tightener it should be hammered differently from one that runs under a tightener. With belts that don't run under tighteners, it is the best to hammer down only on the inside, or pulley side, by laying it on a good hard wood block or smooth piece of iron. If the belt is in such position that it cannot be laid down, the block can be held up against the belt.

If wire lacing is put in in this way, it will not only hold

for months, but for years, says F. Roettger, in *The Wood-Worker*.

The holes in single or three or four-ply belts should be punched about 7/16 in. apart, and in double or tripe or six or eight-ply, about 9/16 in., three wires through each hole, and laced in sections. Belts from 12 to 18 inch can be laced in two sections, and from 18 to 24 inch in three sections, by starting in center of each section. Care should always be taken that the wires do not lie over one another.

After you have finished the lace as stated above, take Cling-Surface, hot, and with a small brush paint the lace well. Cling-Surface is one of the best dressings I have found so far, if used according to directions. It should never be put on a belt with a stick or paddle, nor in lumps, for it will give no good results that way.

One more thing in regard to punching holes for wire lacing: Always use as small a punch as possible. The ends of belt must be perfectly square, and the holes uniform the thickness of the belt from the ends.

A belt should not be too tight nor too loose to get good results, and all pulleys should be perfectly in line. I prefer slightly crowned pulleys for either driver, driven or tightener--and, of course, in good balance.

Now, going back to the lacing, it is a little different in leather belting than in rubber, "balata" and "Gandy" belts. Leather belts should be channeled for the wire to lie in. There is a tool for that purpose. Double or triple belts should be channeled on both sides—that is, where they run under a tightener; but if not under a tightener, on the pulley side is sufficient. In thin and narrow belts where light wire is used, they will not have to be channeled at all. This wire lacing runs from No. 0 to No. 3, the latter being used for the heaviest belts and No. 0 for the lightest. The small wire requires very small punch holes, while the larger wire requires larger holes and farther apart, as stated before. If this plan is carefully followed there need be no trouble with belting.

Belt trouble can be avoided in the degree of tightness. All tightening pulleys should be so arranged that they can be adjusted in line with the belt.

## MODERN INVENTION HAS DEVELOPED CERTAIN WOODWORKING MACHINES

I have been looking around three or four woodworking shops lately, says John Scott, in *Wood Craft*, and, while they are up to date in some things they are awfully behind the times in other matters.

Take the old style swing-saw for instance. Now there is an electrically driven swing on the market. The motor is attached directly to the overhead shaft from which the saw is suspended by means of a single arm which swings upon bushed lugs outside of the shafts. There is an automatic starter with this saw motor which absolutely prevents starting up wrong. It protects the motor against every fool who tries to queer it.

Then there is an automatic jointer which would require volumes to describe it completely. A machine which makes taper-wedged joints perfectly is something which should be in every shop where economy of stock is any object, and where is the woodworking shop of today which is not out after economy of lumber?

A machine which joins lumber together and builds panels up to any width, and does this automatically on one machine, without any lumber waste, is surely a contrivance that no shop can be without.

Right in line with the automatic jointer is also a continuous glue jointer, which has recently been made automatic, and will do anything to a glue joint except talk about it.

There are two miter machines which have come into existence within the last few years about which one man has said "wonder why nobody thought of it before." One of these is the time-honored joint clipper, but made with a clamping

attachment which renders slipping of the work impossible. The new wood trimmer also carries a couple of angle blocks whereby vertical as well as horizontal angles may be trimmed, but there is no excuse for using the trimmer on heavy cuts as frequently as it has been used for there is now on the market a universal miter machine in which a saw with vertical motion does the cutting, and may be set to handle all kinds of coarse and fine miter work, such as fitting, interior trim, picture molding, etc. This saw is very fine-toothed and so arranged that it will cut a couple of polished moldings without starting a sliver. With one of these machines in the shop, the handy wood trimmer will be used merely for close fitting after the heavy work has been done by the miter machine.

The double surface sander saves running work twice and no man should content himself with a single surface sander when both sides of the work must be treated. There is a little oscillating belt sander which may be used for almost any work. The belt vibrates vertically, the work is slid along a horizontal table and pressed against the belt in much the same manner that work is pressed against the vertical spindle of a molding machine.

There is another sander, automatic, which can handle almost any imaginable article, turned work, stair balusters, chair parts, bobbins; in fact, it will be hard to name an article which can't be sanded by this automatic machine.

Before quitting the sanding machines the woodworker should consider a universal sander which is certainly great for certain kinds of work. This machine is adjustable in any direction, very long belts may be used, and it may be so adjusted that the sander belt is at right angles with the table, perpendicular therewith, or at any angle between the two limits. With a machine of this kind, carcasses 14 inches thick may be sanded as easily as half-inch stock.

The serpentine molding machine is another up-to-date. The machine is particularly designed for work which curves in two directions, and it is impossible to imagine a shape or cut which may not be handled easily on one of these machines.

The man who has spent half a lifetime crawling under planers and molders to get at the lower cylinder will hail with appreciation a new top to the planer which can be got at without even looking underneath. This arrangement certainly eliminates the "monkeying" with adjustments, for almost all the adjustments are made with a screw and are quickly and easily set.

## LIGHT MOTOR TRUCKS FOR RETAILERS

There has been an endeavor on the part of commercial motor vehicle makers during the past year to fill the requirements of retail dealers in all lines of trade for light motor delivery wagons and trucks.

It has been recognized that the number of retail merchants in the country greatly exceeds the number of manufacturers and wholesale and commission houses, and that there is consequently a field for sales of light motor wagons for delivery purposes. A number of the long established truck makers have turned their attention in this direction and have brought out new models of light trucks of one-half tone and one ton capacity as additions to their lines of heavier machines. At the same time, many new companies have entered the industry to specialize in delivery wagons and light trucks ranging in capacity from 750 pounds to 3,000 pounds.

This development will be strongly indicated at the Chicago Automobile Show, the second week of which, February 10 to 15, has been set apart exclusively for the exhibition of commercial vehicles.

Of the 77 exhibitors of complete wagons and trucks who have contracted for space, no less than 33 are specializing in vehicles of 750 to 3,000 pounds capacity. Delivery wagons of from 500 pounds to 1,000 pounds capacity, in both gasoline and electric types, will be shown by 15 exhibitors. Prices of these range from \$500 to \$1,800 for the smallest up to \$700 to \$2,500 for the 1,000-pound wagons.

## DOING A WHITE JOB

Very much of the trouble in finishing such a job lies with the foundation stages of the work. Time was when I scarcely ever succeeded in getting a perfectly satisfactory job of this kind, says the writer; now I as rarely miss getting a good job. First, I am careful to sandpaper the running parts extremely smooth. Then I prime with pure raw linseed oil, adding a little more than one teaspoonful of good coach japan to each pint of oil. I saturate the wood to excess, then set the parts away for an hour or so, when I again take them in hand and wipe off all surplus oil with a soft rag, preferably woollen. When thoroughly dry, a priming coat of oil and lead, mixed thin, is applied. After having set aside for three days, the job is again taken in hand and very carefully puttied up with putty made from dry white lead. Two days after this job is lightly sanded off and the first coat of roughstuff given it. This is white, made from dry white lead, 1 part; pulverized steatite (soapstone), 1 part; fine pulverized pumice stone, 1 part; mix with coach japan and turpentine, afterwards adding one gill of raw oil to each pint of the mixture. This must be well worked into the grain of the wood. Then, when dry, apply a second coat; upon this putty up all defects that may appear. This is important. See that every depression, however slight, is filled level with the general surface and you will easily see the importance of the work when you come to rubbing out. A day after you have rubbed out the roughstuff give the job a coat of pure white lead, from the keg, thinning it with turpentine only. There will be oil enough in the lead to bind it. Lay on with a camel hair blender. A flat gloss is needed, and if too flat, which ascertain by trial, add a little more oil. Next day this may be gently rubbed with clean curled hair and then coated again with the white paint. Follow this with a coat of color and varnish made from equal parts of lead and zinc and ground in quick-rubbing varnish. After three days rub carefully and thoroughly with pumice stone. Wash off and follow with another coat of color and varnish, same as the first coat, except that wearing body varnish is used in place of the rubbing. These two coats must be very skillfully

laid, a two-inch bristle brush being the best to use on the body. Let the coats be flowed on generously. Before rubbing this last coat allow it abundant time in which to harden. Finish with an eggshell-gloss, as such a finish will surely wear better than a high gloss finish no matter what some may say to the contrary, and the job will be whiter, too.

Rain water is always to be preferred for rubbing out and for washing with. For the final rub this is especially necessary, and you must use the finest grade of pulverized pumice stone. After rubbing and washing up nice and clean and dry, rub with ground rottenstone long enough to produce an eggshell-gloss.

Running parts are to be given second coat lead on top of the oil priming. Mix the lead with equal parts of oil and turpentine. The comes the third lead, color and varnish, and finish same as body. Striping and ornamental work goes on top of the finish coat, and varnished when dry.

By following the above directions carefully it would seem quite possible for any painter to accomplish a first-class job in white.

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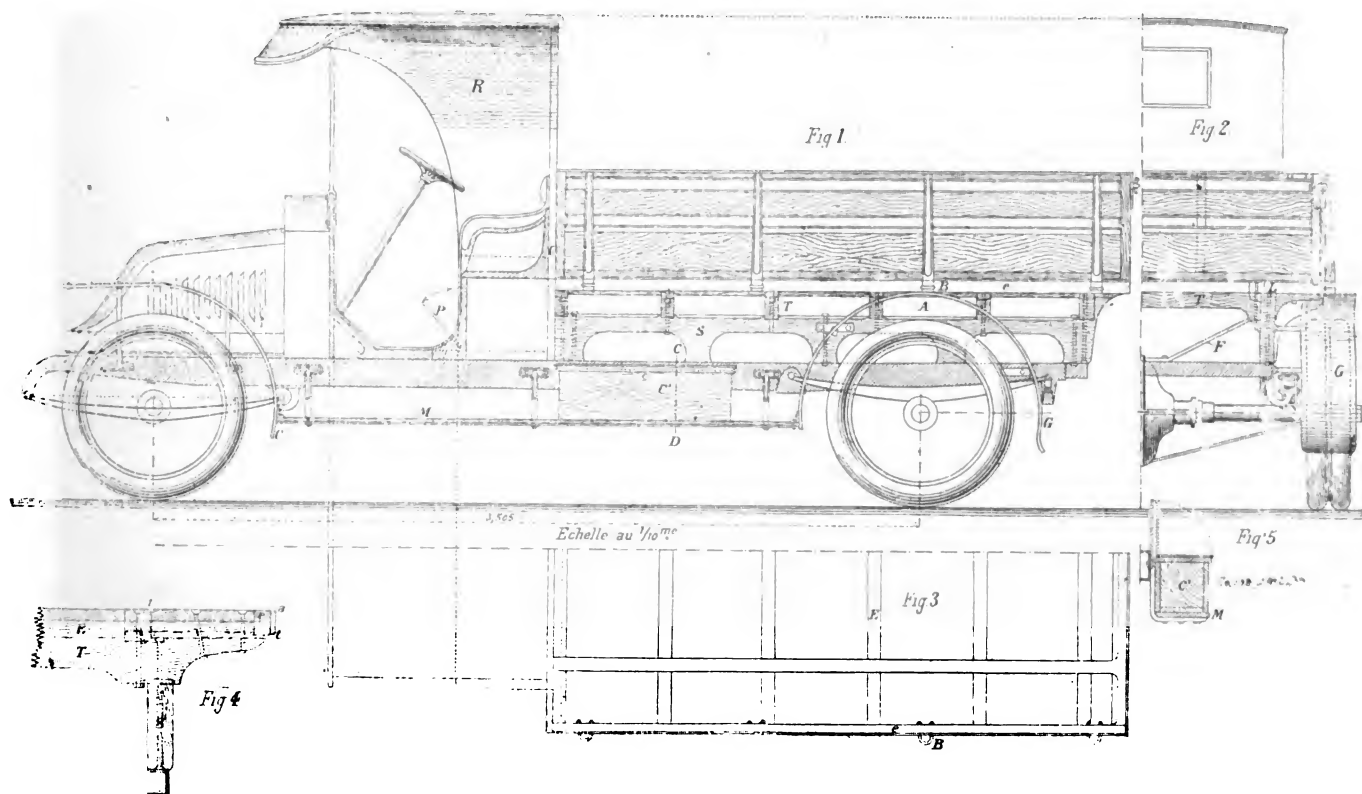
(Signed) G. A. Tanner.

Secretary and Treasurer.

Sworn to and subscribed before me this 30th day of September, 1912.

JOSEPH R. FRITH,

Notary Public.



WORKING DRAWING OF A FRENCH COMMERCIAL TRUCK, SCALE 1/5 ME.

## WISCONSIN RETAILERS HOLD ANNUAL MEETING

A. D. Brewer, Ripon, was elected president of the Wisconsin Retail Implement and Vehicle Dealers' Association at the final session of its annual convention held in the Auditorium, Milwaukee, December 11-13. Other officers are: Vice-president, J. B. Watson, Fond du Lac; secretary and treasurer, F. R. Sebenthall, Eau Claire. The directors are E. B. Robbins, Eau Claire and J. H. Waite, Seymour, and the freight auditing committee is composed of R. L. Nash, Grand Rapids; Walter Miller, Stanley, and F. R. Sebenthall, Eau Claire.

The association voted to hold its next annual convention in Milwaukee the second week in December, 1913.

The association indorsed the proposition of the Manufacturers' National Association offering assistance to the Wisconsin organization in organizing clubs of retailers in every county, and the National Retail Implement Dealers' Association. It recommended a law providing for penny postage. It also advised members to take policies in the Minnesota Retail Implement Dealers' Fire Insurance Association. The Minnesota law requires only a 25 per cent. reserve fund, while the law of Wisconsin demands twice as much. The dealers thought that the difference of reserve was worth considering.

What is considered an important action taken by the convention is that which provides that the association shall establish a freight auditing bureau for the protection of its members against overcharges. Robert G. Nash, former president of the association, delivered an address in which he urged such a step. The board of delegates was instructed to appoint a committee of three to start the auditing bureau.

## ST. LOUIS DEALERS BANQUET AND ELECT OFFICERS

The Implement, Vehicle and Hardware Dealers' Association of St. Louis, banqueted and elected these officers at the Planters Hotel the eve of December 9: P. E. Ebrez, president; L. A. Geserech, first vice-president; H. M. Hubbell, second vice-president; J. M. Hubach, third vice-president; T. R. McCoy, fourth vice-president; Russell E. Gardner, Jr., fifth vice-president; George M. Hoffman, treasurer, and W. C. Howland, secretary.

## STUDEBAKER NEWS

Edwin C. Witwer, recently appointed purchasing agent of The Studebaker Corporation, for the vehicle division, South Bend, Ind., started with the Studebaker Bros. Mfg. Co. in October, 1880, at the age of 14, as office boy, and has been continuously employed by the company since July, 1883. Worked four years at the bench learning the trade of coach body maker, then went through the various departments of the carriage branch of the business, and for the past twelve years has held the position of assistant purchasing agent.

## KANSAS CITY CLUB ELECTS OFFICERS

The Kansas City Implement, Vehicle and Hardware Club elected these officers at the Hotel Baltimore, December 9: Edward O. Faeth, president; F. H. Turner, first vice-president; Horace Carr, Jr., second vice-president; William A. Jones, secretary and treasurer; Edwin Downs, chairman of the executive committee.

## THIS YEAR'S C. B. N. A. MEETING

The date of the next meeting of the Carriage Builders' National Association in St. Louis, has been fixed by the committee as of October 13, 1913. This date was chosen because it was the only open date that could be had in such an overcrowded convention city as St. Louis.

## SALES DEPARTMENT BANQUETED

The sales department of The F. A. Ames Co. enjoyed a delightful banquet at the Rudd House at Owensboro on Dec. 9. The menu was an elaborate course dinner, the board being set in a very festive manner and lasting from 8 o'clock until 11, with impromptu talks from each one present. The glowing reports and feeling of gratification at the results already achieved and the prospects for the future made the affair one of great pleasure. There were present, Mr. R. L. Axton, traveling western Kentucky and Tennessee; Mr. B. F. Dollison, traveling Ohio, West Virginia, Maryland and Virginia; Mr. Chas. Goering, traveling eastern Kentucky, Tennessee and Alabama; Mr. L. C. Goering, Jr., traveling Mississippi, Louisiana and Arkansas; Mr. J. W. Hawkins, traveling southern Indiana and Illinois; Mr. B. H. King, traveling Georgia and Florida; Mr. A. L. Kurtz, traveling Illinois; Mr. S. P. Neely, traveling North and South Carolina; Mr. H. L. Scharlach, manager of sales; Mr. F. A. Ames, president of The F. A. Ames Co.; Mr. Chas. F. Pratt, vice-president and general manager; Mr. Gale B. Smith, secretary and treasurer.

Of the sales force, Mr. J. S. Field, of Iowa; Mr. E. A. Douglas, of Illinois, and Mr. F. P. Shafer, of New York, were not able to be present although members of the fine sales organization of The F. A. Ames Co.

## LUMBER TRADE IN 1912 AND 1913

Review of conditions prevailing with the lumber industry in 1912 by the American Lumberman shows that this branch of trade shared in large measure the prosperity which has existed in the country during the later months of the year, and the forecast for 1913 is most encouraging; in fact, the lumber industry expects 1913 to be one of its best years.

In all the mill sections of the country the problem has been to meet the demand for lumber. When business began to show greater strength in the country a few month ago stocks of retailers generally were greatly depleted, and the stocks of the manufacturers, due partly to inactivity at many mills, had been allowed to go down. Better business conditions set all mills in operation and permitted the manufacturers to obtain much better prices for their product.

The car shortage situation, which was felt in all industries, hit the lumber field severely, and this shortage, combined with that of labor which existed at many mill points, was the chief retardant feature of the industry.

Low grade as well as high grade lumber has been enjoying a demand larger than the supply, and prices are much improved. Only occasionally is there found a logger, manufacturer, jobber or retailer in a complaining mood. It is quite generally realized that downward revision of the tariff is inevitable and the results of any revision have already been largely discounted.

Reviewing the lumber industry as a whole, it is now in better shape than it has been for several years, and it is confidently expected that 1913 will be a banner business year.

## NEW GENERAL MANAGER FOR DIAMOND RUBBER CO.

Clifford B. Meyers, former manager of the Diamond Rubber Company's branch at Cleveland, O., has been appointed general manager of the Swinehart Tire & Rubber Co., at Akron, O. Mr. Myers was born in Akron and has had quite a number of years' experience in the rubber business.

## A FLANDERS BUCK

Mr. W. A. Buck, a Flanders factory representative, has joined the forces of the E. V. Stratton Company, Inc., Albany, N. Y., distributors for the entire line for eastern New York, western Massachusetts and Vermont. Mr. Buck has charge of the Pittsfield branch.

**A THOUGHT HERE AND THERE**

Dust is dangerous; dust is expensive to handle by hand and is hard on the machinery. Dust creates accident and fire hazards. It produces an unhealthful condition of the atmosphere. It impairs the efficiency of the workman directly and indirectly. In the wood working factory, probably, more dust is created, in proportion to the amount of work done, than in any other class of industry, and although nearly every manufacturing operation produces more or less dust—as in flour-milling, textile manufacturing and coal mining—it is not often that the conditions resulting from disregard of the necessities thus imposed are as bad as in the wood working trade.

Under ideal conditions all of the dust produced in manufacturing operations is caught at the point of origin, right at the machine where it is produced, and is conveyed, in non-combustible conduits, to a point where it may be properly taken care of. In the wood working plant, the utilization of dust as fuel is the most economical and effective way of disposing of it, and makes it possible to get rid of it easily and cheaply.

I have made observations on a bunch of good men to see how overtime affected their vitality the next day, and came to the conclusion that two hours' overtime two nights per week was the limit at which they could hold their ten-hour gait. On the other hand, I have assigned men to a job which would ordinarily take six hours, and told them they would get five hours' pay to complete it and could then go home—and they did it in four hours. No one lost by that, but no one with horse sense would demand that those men work ten hours at that four-hour gait.

The new multiple spindle, double table, power fed boring machine is also a great labor saver. The new style belt sanders have revolutionized, simplified and perfected the art of sanding. These machines sand all irregular-shaped pieces with great rapidity and the work is beyond criticism. There are a number of good machines on the market which will save money rapidly as compared with the old fashioned way of doing things. The manufacturer who has his moldings and irregular-shaped pieces sanded by hand no doubt is one of the men who has not been making any money.

It is said to actually cost more to convert logs into lumber today than it did twenty years ago, even if we have added labor saving machinery and steam feeds. For one thing, the men that do the work get bigger wages; and, then, there have been added equalizing, kiln drying and many other things not a part of the earlier saw mill operations.

A simple way of testing the absorbing quality of glue is to take, for instance, a sample weighing one pound and soak it in cold water for twenty-four hours. At the expiration of this time the excess water is poured off and the glue jelly is weighed. The weight this shows is deducted from this amount: the remainder is divided by the weight taken, and you have your result of absorption. The amount of water the sample takes up, and the character of jelly found, indicate the source and quality of the glue being tested.

At least one extra boiling kettle should be provided in the glue room equipment, as this will give the crew plenty of chance to keep kettles alternately clean and in good shape. Kettles should all have safety valves, or blow-off valves, as they are commonly called; this will prevent an explosion, if, through forgetfulness, the stopcock on outlet is left closed while the feed pipe is open. This will give plenty of warning, when blowing off, of the approaching danger, which can easily be avoided at this stage.

**BUYS PHILADELPHIA PLANT AND WILL MOVE IT TO BALTIMORE**

The P. Kennedy Foundry Company, of South Baltimore, Md., completed negotiations for the third addition to its plant the past year by purchasing the iron and steel foundries of the Standard Roller Bearing Company, of Philadelphia.

The deal includes all the Standard Company's contracts. The plant will be moved to Baltimore. The Standard Company proposes to concentrate on the manufacture of patented automobile specialties.

**FRANKLIN CO. INCREASES CAPITAL**

The capital stock of the H. H. Franklin Mfg. Co., of Syracuse, N. Y., manufacturers of the Franklin automobile, was raised from \$300,000 to \$1,500,000 at a meeting of the stockholders held Friday, January 3. The new stock consists of 9,000 shares of common stock of par value of \$100 each, and 6,000 shares of preferred stock, 7 per cent. accumulative, of par value of \$100 each.

The increase in the common stock is made by a 200 per cent. stock dividend upon the present capital stock.

**GOOD FELLOWS' CLUB**

The Hercules Buggy Company has organized a Good Fellows' Club of everybody connected with the plant, from president down through the office force, the heads of departments and employees.

The employees are the bosses of the big fund that was collected to put joy into many big and little hearts where otherwise Christmas would dawn for them as the bleakest day of the year.

**MOVED TO BETTER QUARTERS**

The Buffalo T. & T. Company, of Buffalo, N. Y., have moved their office and factory from 108 Terrace to 123 West Chippewa street, where they are manufacturing their line of carriage and auto tops and trimmings. They also make the Buffalo Special Truck Top for commercial cars, which is one of the neatest and most practical tops for that style of vehicle now on the market. In addition to their line of manufactured goods the firm does a general trimming contracting business.

**SIOUX FALLS CLUB ELECTION**

The Sioux Falls Implement and Vehicle Club, composed of jobbers and branch house managers in that city, has elected the following officers for 1913: President, H. L. Pierce; vice-president, J. C. Talbott; secretary, A. R. Dempstre. The following committee chairmen were appointed: Finance, F. O. Perkins; railroad and legislative, H. J. Kelley; entertainment, H. W. Bright.

**HARD COATING FOR WOOD**

Heat fifty parts resin together with fifty parts chalk, fifty parts sand and four parts linseed oil in an iron kettle; add one part oxide of copper and one part sulphuric acid (the latter with caution). After mixing it carefully the mass is spread, while hot, upon the wood by means of a hard paint brush. Add more linseed oil if too thick.

**PROPOSED AUTO ROAD ACROSS CONTINENT**

At a banquet attended by some 300 Indiana automobile manufacturers and dealers, the amount of \$800,000 was subscribed towards the construction of a macadam roadway from New York to San Francisco. The length of the road would be 3,349 miles and the total estimated cost \$25,000,000.



## PHILADELPHIA CARRIAGE BUILDERS' MONTHLY MEETING

The Carriage, Wagon and Motor Vehicle Association of Philadelphia held its regular monthly meeting at the Hotel Hanover, Friday evening, December 20. O. B. Shore, of the Philadelphia branch of the Goodyear Rubber Tire Co., was elected to membership.

Reports of committees were called for, after which a debate between champions of horse and motor vehicles was announced, the question being, "Will the Motor Vehicle Supersede the Horse-drawn Vehicle?" Messrs. Marbaker and Morgey took the affirmative and Messrs. Risdon and C. Preisdanz the negative. Mr. Marbaker began the argument giving facts and figures from which deductions were made showing that the days of the horse were numbered. Mr. Risdon's argument which followed showed that there is still a place for the horse vehicle and that horses would always be used. Messrs. Morgey and Preisdanz closed for the affirmative and negative sides respectively.

All four gentlemen brought out good arguments, and the two sides were so nicely balanced that the judges required considerable time to make up their minds as to which side had the better of it. The referees, Messrs. Bittong, Taylor and Ervien, finally decided that, according to the facts presented, the motor car would not supersede the horse-drawn vehicle, but that motor vehicles would predominate and that the number of horse vehicles would become somewhat diminished.

Nearly all of the members were called upon for an expression of opinion on the subject, and the majority of them spoke in favor of the horse-drawn vehicle. After the adjournment the usual dinner was served in the dining room of the hotel.

## WHAT ABOUT HORSE REPAIRS?

Many hundreds of men who pride themselves on the possession of true commercial instincts still turn down motorvans on the score of excessive repairs, says Commercial Motor.

It is becoming apparent to everybody that mechanical repairs to motorvans have steadily become fewer in number, and that uniform running is the rule today with all approved models. While there has been this improvement in the mechanical vehicle, we wish to point out that horse "repairs" are still a source of constant anxiety and trouble to all who own or use animal traction, and that natural laws provide all necessary guarantees that the animals will so continue to be disturbing elements of uncertainty in all future years.

No edition of the popular and instructive "Motor Manual" discloses a list of motor ailments which can reveal anything like the list of horse ailments that is disclosed in any veterinary treatise. With motorvans, effect and cause are explicable and closely linked together; with horses it is not wide of the mark to say that the owner seldom knows what is going to happen, or when ailments and illnesses may suddenly affect portions of the stable.

## SAFETY DEVICES

One of our most vital questions at the present time is, "Does it pay to protect the machine wood worker?" Actual figures compiled by those who have studied the question have practically proved that it always pays to protect the wage-earner.

Some one must support those dependent, in the case of injury. Cities and states have long performed this duty, but communities have decided to shift the burden to the employer, as the man responsible for the conditions that caused the injury. The workmen's compensation acts which have recently been adopted by ten states, require, in practically every instance, that the employer furnish the funds.

There are a few far-sighted factory managements which have anticipated these laws. They have already equipped their fac-

tories with every possible device that will protect the workman, and have installed compensation systems. In their investigations they have come to a rather surprising result—that it actually saves money to protect the workmen. Accidents to machine operators in both large and small factories are of frequent occurrence, and usually involve serious loss to the employe as well as the employer.

The laws now in ten states compel the employer to take care of the injured workman and to pay him during disability. It has been in the past only a question of managerial viewpoint. Where there is no compensation act, it often happens that as soon as this injured operator is able to get about, a lawyer comes to see him and advises by all means to bring suit against the company.

This drags the company into the courts, and usually the case is carried from one court to another, until the expense to the company has amounted to many times the cost of both the machine which the operator was working at and a suitable protective device, which might have been installed.

One large industrial corporation has found that the annual expense of defending lawsuits of this nature would pay for equipping the factory throughout with protective devices. In the light of these facts, this company is devoting a great deal of energy to installing factory equipment provided with protective devices of almost every kind.

## FIREPROOF WHITEWASH FOR FACTORIES

A most effective composition for fireproofing exterior surfaces may be formed by slacking a sufficient quantity of freshly-burned quicklime of the best grade, and when the slacking is complete there is added such an amount of skim milk, or water in its absence, as will make the liquid of the consistency of cream. To every ten pounds of this liquid is added separately and in powder, stirring constantly, the following ingredients in the order named: Two pounds of alum, twenty-four ounces of sub-carbonate of potassium or commercial potash, and one pound of common salt. If white paint is desired, a further addition is made to the liquid, though the whiteness is found to be improved by the addition of a few ounces of plaster of paris. Lampblack has the effect of giving it a number of shades from slate color to black. Whatever tint is used it is incorporated at this stage, and the whole, after being strained through a sieve, is run through a paint mill. When ready to apply the paint is heated nearly to the boiling point of water, and is put on in its heated condition. It is found that the addition of a quantity of white sand to this composition renders it a valuable covering for roofs and crumbling brick walls, which it serves to protect.

## TO REFINISH CARRIAGE WHEN FINISHED IN NATURAL WOOD

The right way to refinish a carriage that was finished in natural wood and the varnish has peeled in places, first sandpaper the job with fine sandpaper to remove dirt, specks, etc. Sandpaper the peeled places very smooth, making sure to remove all shelly particles of varnish. Then touch the bare spots with any good, reliable, permanent wood filler. After a short time wipe off with a soft cloth. If the grain of the wood is not completely filled, apply a second coating of filler. Then clean the whole job off nicely and flow on a coat of pale rubbing varnish. Pale light colored varnishes are needed for natural wood finished jobs. Any standard carriage varnish maker furnishes this sort of varnish. Rub this first coat lightly, when dry, and apply a second coat. Give this a firm, solid rubbing, and on ordinary work finish over this second rubbing coat. For high grade work use three coats of rubbing varnish and a coat of finishing flowed on. If any striping is to be done put it on the first rubbing coat.

# THE HUB ADVERTISING SERVICE

Edited by Dundas Henderson

The first month of the year is an appropriate time to digress from the plain truth of describing logical advertising to make a few pertinent remarks about publicity in general, and the peculiar cussedness of the average dealer in particular, when it comes down to business sense.

How often do we hear an otherwise reasonable and up-to-date dealer mumble "can't afford it" when advertising is suggested to him as a solution for his failing business.

Suppose that the same man was suffering from a bodily complaint that necessitated the attention of a doctor, would he say "I can't afford it"? Would he invite total extinction as a human being without giving the physician a chance to cure him?

Not for a single moment! And he would not monkey about trying to cure himself, either. He knows that life is too precious a thing to play with—he realizes that only a man trained in the intricate and delicate functions of the human body can give him back that health and strength to which he has been accustomed. He can always afford to have his body attended to by an experienced physician.

It is precisely the same with a diseased or run down business. That business brings your daily bread and all that happiness and comfort to which your wife and family are entitled through you as the bread-winner. The wreck of that business may mean just as much misery in the future as the wreck of your bodily health. Why therefore should it not have some of the intimate attention that you give your body? When your business is run down or in a bad condition, when it is not producing so much as you think it should, why not get it attended to by a business physician who is trained in the intricacies and complaints of just such concerns? Why not get him to prescribe the proper tonic, just the same as the human physician would? You can always afford that just as well as you can the physician for your body. The expenditure of money in this way is not an expense, it is an investment, a necessary payment that is due by all merchants when necessity compels it.

This advertising should not be carried on in a spasmodic way, either.

John Wanamaker, the great New York and Philadelphia retail merchant, on one occasion said: "Advertising doesn't jerk; it pulls. It begins very gently at first, but the pull is steady. It is likened to a team pulling a heavy load. A thousand spasmodic, jerky pulls will not budge that load, while one-half the force in a steady effort will start and keep it moving."

Here is the solution in a nutshell—steady effort. The merchant who uses advertising "occasionally" is simply wasting his efforts. It is the steady pounding—and pounding again—that makes success in advertising as in everything else. All advertising is good in proportionate degree to how it is done, and even occasional advertising has some value, but to be successful to the point of permanently increasing your bank account, it must be done persistently and systematically.

You advertise to sell your goods and keep your name in front of the people. It is only reasonable to suppose that you will be better able to do this with persistent efforts than with spasmodic attempts. If you were to tell a man daily about the quality and prices of your goods you would produce more effect than if you were to talk to him at uncertain intervals.

The question of changing the salesmanship or "copy" in your advertising is an important one. It acts this way. Suppose you had some special wagons for sale. Suppose you were determined to sell some of those wagons to some particular customer. After you had asked that customer to buy those wagons would you, the next time you approached him use exactly the same language and arguments? You know you would not. You would hunt up new ideas to attract his attention, new ways of convincing him and new methods to get him to buy. You must apply the same principles to your advertising. You must be continually hunting up ideas, new arguments and new ways of attracting and holding attention. Salesmanship in newspaper space is just the same as salesmanship in your place of business.

Much more than persistence is necessary in your advertising. Every kind of human action originated by a human being may be strong or weak according to the energy put into it by the person. The effect of those actions on the rest of the world, or on any particular person, when those actions make a deep and paralyzing impression, is called "punch." We talk about the punch of a theatrical play, meaning the strong permanent blow of its action on the feelings of the audience. A story has punch and the most ordinary clerk in a store can give punch to his daily work and life that will leave a lasting impression on the people with whom he comes into contact. It is punch that has made our pioneers of industry what they are. It is punch that makes you successful—without punch you cannot even hope to start on the road to prosperity.

Punch should enter into every action of your life. If you pray put punch in it. If you sell goods put punch into the selling talk. Punch shows sincerity. If you look a woman or

## Yearly subscriber's order blank for advertising service

To The Hub,  
24 Murray Street,  
New York City

Date.....

I  
Herewith we enclose Fifteen Dollars Sixty Cents for Twenty-six special vehicle cuts now published and to be published in  
The Hub during the next twelve months. It is understood that we are to have sole rights of using the cuts in.....

This contract cannot be cancelled. The sending of the cuts shall mean that I have your consent to use the copyright of the illustrations locally in stipulated area, but not beyond.

Accepted for The Hub

Firm Signature.....

by.....

By.....

Address.....

Note—If you are not now a subscriber to The Hub this contract must be accompanied by \$2 for a year's subscription.



**Now** is the time to buy. If you want one or more built, place your order **today**. Get first service and early delivery. We guarantee absolute satisfaction and work that will last a lifetime.

A few of the latest pattern wagons always in stock—good looking wagons that are as good as they look.

**Call and inspect—no obligation to buy.**



**Of course** our repairs are honest. One repair job would not keep this shop going—we must get you **back** again with more. You can therefore depend on the reliability of **all** our work—as well as the reasonability of our charges.

**Try us ONCE—that's all we ask.**

### How to use THE HUB ready-made advertisements

The advertisements shown herewith are in one and two thirteen em columns width. The printer will tell you what that means. It allows you to use those ads in any newspaper, practically, in the country. The cuts at the top of the ads are supplied in both single and double column size. That is, although they may be shown in double column here they will also be supplied in single column. You can make those ads as long as you like. They are shown here in short lengths. It is usual to alter them to suit local conditions and to add lists of articles for sale or special descriptions of your goods. In every case you must put in your name and address.

If there are any questions in your mind regarding the use of those ads drop a letter to this journal and we will give you all the assistance you need. And don't forget that we also maintain a department for getting up all kinds of advertising literature and ideas at a low rate.

man in the face and put punch into the arguments and suggestions you use to sell your goods, you will create the impression that you believe what you say and that fact alone goes a long way towards consummation of the sale.

When you look carefully over the written accounts of the men and women who have made history and been really great in all walks of life, you will find innumerable instances of punch, showing clearly that success was built on it, as much as on their actions.

Many men and women believe that all that is necessary to secure success in life is to conceive an idea or set of ideas and carry out the actions in connection therewith along well defined rules. They even become imitative and follow the rules laid down by the great men and women I have enumerated. This is the road to failure. No matter how good your plans or well laid the methods of carrying them out, you must put punch into their execution to make them successful.

If you want to make your business a success and feel that the highest grade of salesmanship both inside and outside is necessary to that success—be sure you also allow for punch in the execution of your plans. In your publicity you should not have tame salesmanship. No matter the class of your trade, you need punch in that salesmanship to impress your advertising on the minds of the people and make them remember you sufficiently long and earnestly to buy. Unless that play has punch it would not leave a sufficiently good impression on the play-goers to make them criticise it to its advantage. Use punch, then, in your advertising. Punch home straight from the right shoulder into the minds of the prospective customers and they will remember you longer and more favorably than all possible rivals.

Punch in salesmanship inside your business is also necessary to your success. Unless every one of your staff, as well as yourself, uses punch in every method originated to make trade, your success will either be so weak as to be a practical failure or your failure will be complete and absolute. Courtesy to customers, for instance, should have as much punch in it as the sales arguments and suggestions used to get trade. Every man of healthy caliber likes strong, virile energy in those who serve them and, if they are weaklings, then the punch is given even greater value because you exert a hypnotic influence by the strenuousness of your desire to please.

Punch must not be confounded with "ginger." The latter is a bracing up within yourself, a toning up of the body and mind to get the most out of your ordinary actions. Punch is the gathering together of all your strength to impress yourself and your wares on the minds of the people to the end that they shall pour money into your bank account.

If you take the cleverest salesman that ever breathed and put him alongside a man of average intelligence in your business, both being of the same persistence, and ask them to sell your goods, the man with the punch will win in the end.

Human nature is guided and handled by suggestion and argument and punch may fitly be called suggestion and argument well "rubbed in."

Use punch.

An up-to-date dealer will find the ready-made illustrated ads shown in every issue of this paper, the best means of advertising in his local newspaper. They have human interest, the pictures are well drawn by competent artists and the wording is such as has already made success for retailers elsewhere. The price is small and within the reach of the poorest merchant. The best advice it is within my power to give you regarding advertising, is to start with this issue using those ready-made ads. Fill up the order blank and mail it now. Start the year determined that you will have a bigger and better business at the end of it.

## PREPARING SAMPLES OF PAINT FOR ANALYSIS

If the sample to be examined is in the form of a mixed paint it will be advantageous to free the pigment from the mixing

fluid. This may be done in several ways. When nothing but the composition of the pigment is desired the simplest method is to take about 25 grams of the sample, previously thoroughly stirred, and pour in a small beaker of about 150 C. C. capacity. This is then filled with ordinary gasoline, naphtha or petroleum-ether, and then allowed to stand until the liquid is clear. Pour off the clear liquid and add more gasoline or solvent. Generally three or four applications will be found sufficient to free the pigment from all oil and most of the dryer, the latter being disregarded. The gasoline or solvent is then entirely evaporated from the pigment by heating in an air oven at a temperature of 100 deg. C. until the remaining solvent is entirely evaporated. It is then rubbed up in an agate or porcelain mortar and passed through a fine sieve. The sample is then ready for analysis.

When it is necessary to be extremely accurate in getting the percentage of mixing fluid and pigment it will be found best to exhaust the sample in a Soxhlet extractor, using petroleum-ether or ordinary sulphuric ether as a solvent. A convenient size of Soxhlet extractor is one inch in diameter and nine inches high. The inside tube is an ordinary test tube with a hole cut or blown in the bottom. The bottom of the tube is then packed with a piece of cotton. The tube and cotton are weighed first, then the sample of paint is added, and the whole weighed again, the increase being the weight of sample taken. Another plug of cotton will be found necessary in cases when the pigment is so light that it floats to the top of the test tube. This occurs usually when the cotton is packed too tight to permit the solvent to flow out the bottom as fast as it condenses, and, oftentimes, it will be necessary to place a small glass stopper on the upper layer as a weight to prevent the contents of the tube from overflowing or floating to the top. When such an arrangement is necessary, the whole tube, including sample and two plugs of cotton, is weighed, but not the glass which was added as a weight. About an ounce of the solvent, ether or petroleum-ether, is then placed in the flask and the water heated in the water bath not quite to boiling point. Soon the ether will begin to appear in the condenser and drop back in the test tube containing the paint, and, passing down through the sample, will fill up in tube and siphon over. This operation is kept up until the solvent liquid is perfectly clear and shows no color, which in most cases would be due to oil. Usually about a dozen siphonings will be sufficient, but samples vary, and it is best to allow the extractor to work until the solvent condenses perfectly colorless. The test tube containing the oil-free paint is now removed and thoroughly dried in a drying oven and then weighed.

The loss in weight equals the oil present, and the dried sample is taken out to be used for the analysis. If it is desired to find the amount of oil, the small flask can be weighed before the operation, and then the ether is evaporated in an air oven, and the amount of the extracted oil weighed.

If a very rapid analysis is desired the mixed paint can oftentimes be boiled directly with strong nitric acid, when the oil will collect in a gummy floating mass and can be filtered off and washed well with hot water acidulated with nitric acid. This method, however, is not to be recommended where insoluble pigments are present, as there is often formed a thick mass quite impossible to handle to advantage.

## MITCHELL SELLS WAGON BUSINESS TO STAVER

To be better able to accommodate its growing motor car business, the Mitchell-Lewis Motor Company, of Racine, Wis., has sold its entire delivery, spring and mountain wagon business to the Staver Carriage Company, of Chicago. The department formerly devoted to the production of wagons of this class will be used for additions to the body, trim and paint shops.

# Trade News From Near and Far

## BUSINESS CHANGES

G. Wertman has purchased the Beitzel stock of vehicles, etc., in Alta Vista, Kas.

J. F. Etter has disposed of his stock of vehicles in Delphos, Kas., to Mr. Laird.

J. A. Jacks has sold out his vehicle and implement business in Steele City, Neb.

M. Stova has purchased the stock of vehicles, etc., of Ernest Halstead, in Linwood, Neb.

Henry Parsons has purchased the stock of vehicles, etc., of Reynoldson Bros., in Alton, Ia.

Paul Krause has purchased the stock of vehicles, etc., of Claude Creekpaum, in Albion, Neb.

The Slocum-Horning Co., of Saginaw, Mich., has increased its capital stock from \$6,000 to \$25,000.

V. J. Conklin has purchased the stock of vehicles and implements of Ole Odland, in Gayville, S. D.

Jack & Troxel have purchased the stock of vehicles, etc., of P. M. Kearns & Son, in Vinton, Ia.

J. H. Cavanaugh has purchased the stock of vehicles, etc., of Brady & Rogers, in Marysville, Kas.

Elmer L. Allen has purchased the stock of vehicles, etc., of Schmidt Bros., in Valley Springs, S. D.

Russell Hursh, of Macksville, has purchased the vehicle stock of Geo. S. Scantlin & Co., in Pratt, Kas.

At Palestine, Tex., W. O. Vandiver and Eugene Fore have bought the H. L. Cool vehicle business.

Hellickson & Dunford have purchased the stock of vehicles, etc., of Wm. McGee, in Harmony, Minn.

Hirsch Bros. have disposed of their stock of vehicles, etc., in Tripp, S. D., to Geo. Weiderrich, Sr.

Clarke & Eaton have purchased the stock of buggies of Carmin & Logan, in LaCrosse, Idaho.

A. T. Walker & Son have purchased the business of the Red Cloud Auto Co., in Red Cloud, Neb.

Boggs & Son have purchased the stock of vehicles and hardware of G. W. Hostetler, in Jones City, Okla.

Theo Knecht has purchased the stock of vehicles and implements of Blakkolb & Emme, in Gregory, S. D.

V. V. Akin has purchased an interest in the vehicle and implement business of Mail Bros., in Manhattan, Kas.

Mr. Lorenzon will continue the vehicle and implement business of Cherveney & Lorenzon, in Marshalltown, Ia.

P. B. Ibeck, of Newkirk, Okla., has purchased the stock of vehicles, etc., of Thos. Daniels, Jr., in Douglas, Kas.

Claudell Bros., of Conception, Mo., have purchased the stock of vehicles, etc., of Geo. McMillan, in Silver City, Ia.

Waddell & Sattler, of Norfolk, Neb., have purchased the stock of vehicles, etc., of Hervert Bros., in Ravenna, Neb.

Thomas Daniels, Jr., dealer in hardware, implements and vehicles at Douglas, Kas., has been succeeded by P. B. Ibeck.

The Wm. F. Lutz Co. has purchased the business of the Farmers' Harness, Carriage & Implement Co., in Santa Ana, Cal.

Orie Myers is now the sole owner of the Jackson Carriage Works at Clarksburg, W. Va., having purchased Mr. Soper's interest.

At Union, Ia., J. R. Alexander and Clint Wilson bought the Burlington's carriage and implement business, formerly owned by Watson & Co.

The Mead Carriage Company will continue the business now conducted in Pittsfield, Mass., by W. D. B. Mead. Michael Hussey, who has been with Mr. Mead for the past eight years, will be resident manager and Mr. Mead will retain a financial

interest in the enterprise. He has property interests in San Diego which will engage his attention for some time.

Heinzelman Bros. Carriage Company, Chicago, has decreased its capital stock from \$50,000 to \$35,000 and the number of directors from five to three.

## BUSINESS TROUBLES

John W. Coobaugh, a wagon maker of Dundee, N. Y., filed a voluntary petition in bankruptcy. He has debts amounting to \$2,552 and assets of \$500.

Creditors of the Highland Buggy Co., Cincinnati, received dividends totalling \$54,394.27 on claims aggregating \$92,469.26, the total assets of the bankrupt being \$59,882.71.

The Bates-Odenbrett Automobile Company, 503 Broadway, Milwaukee, Wis., was forced into involuntary bankruptcy, December 20, when creditors of the firm filed claims against it in the bankruptcy court.

The property of the Lion Motor Car Co., of Adrian, Mich., was sold and the sale confirmed December 31, by Referee Joslyn, Samuel Winternitz, of Chicago, who bid \$13,000 getting the property. The bid was forced up from \$12,250 after the postponement of the sale a week before.

W. T. Durbin, receiver for the Anderson (Ind.) Carriage Mfg. Co., has filed his final report in the superior court. It shows the creditors received 29/10 cents on the dollar. The report further shows that the receipts were \$14,016.45; disbursements, \$5,703.14, leaving \$8,313.31 to meet obligations of \$284,103.10.

The United States Court at Toledo has again granted permission to offer for sale the Findlay (O.) Motor Co. plant, the sale to occur Thursday, January 16. No bid for less than \$50,000 can be accepted. More than \$300,000 capital has been put into this concern and at one time 200 men were working. It has been closed for more than a year.

In a case involving \$20,000 the circuit court at Findlay, O., affirmed the verdict of the common pleas court in the case of Driggs-Seabury Ordinance Corporation against the Findlay Carriage Co. The suit was brought to recover money alleged to be due on an account. The court gave a verdict in favor of the Findlay Carriage Company, overruling the claim against it.

Referee in Bankruptcy Lee E. Joslyn has decided to offer the plant of the Grabowsky Power Wagon Co., Detroit, Mich., at auction, January 23, no better bids being received after the extension of time following the opening of bids. It is expected that the bid of \$55,000 submitted by Winter & Co., of Chicago, for the machinery and property other than building and real estate will be accepted. The best bid for the property, buildings and elevators was \$137,300 made by the Joy Realty Co., and Referee Joslyn believes that \$200,000 should be realized from the property. This would pay about 50 cents on the dollar to creditors.

Inability to realize upon its outstanding accounts or to borrow sufficient funds from banks to meet pressing claims caused the appointment of a receiver December 13 for the Continental Carriage Company, a \$75,000 corporation of Cincinnati, O. August H. Miller, president of the company, was named as receiver, with bond at \$10,000. The company had assets worth \$61,000, while its liabilities were but \$35,000, but while its assets exceeded its liabilities to the amount of \$26,000, about \$42,000 of the assets represented stock on hand that had but little value unless manufactured into vehicles. The company also had between \$15,000 and \$20,000 worth of orders on hand, in contracts for future delivery, and the company believed that



if it was tided over its difficulty until it could realize upon some of its present assets and collect some outstanding accounts, it would be able to keep going all right. However, creditors kept pressing and the inability to make collections or realize upon assets or borrow money sufficient to meet these pressing claims laid the concern liable to a multiplicity of suits seeking judgment on claims, which might dissipate the assets by sacrificing them to meet judgments. Therefore, it was decided to seek the protection of the courts through a receivership.

### IMPROVEMENTS AND EXTENSIONS

Wm. Erickson, of Warren, Minn., is erecting a new vehicle repository.

F. S. Travis is erecting a new vehicle and implement store in Tarkio, Mo.

Wm. E. Rathbun is erecting a new vehicle repository in Mitchell, S. D.

P. M. Coleman is about to erect a new vehicle and hardware store in Ryan, Iowa.

T. C. Wilson is about to begin the erection of a vehicle warehouse in Cheney, Neb.

John J. Walsh, Roxbury, Mass., will erect a one-story brick carriage shop, 50 x 140 feet, to cost \$8,000.

John Raymer, of Reardan, Wash., has completed his new brick block and will have a handsome vehicle display room.

The Emerson-Brantingham Company is completing an extensive addition to the Newton Wagon Works, at Batavia, Ill.

C. P. Meredith is about to begin the erection of a new warehouse in Atlantic, Ia., to take the place of one recently burned.

The Square Deal Buggy Co., Mount Pleasant, Utah, is now located in its new brick building, 100 x 50 feet, on State street.

The Bloomington Hardware Co., of Bloomington, Texas, is erecting a new building, and the first floor will be used for a vehicle display room.

The Welsh (La.) Carriage and Implement Co. has purchased the lot adjoining its present store on which it is erecting an addition 30 x 120 feet.

The Consolidated Wagon & Machine Company, Salt Lake City, Utah, will remove its wholesale department from the State street warehouses to its premises at the southwest corner of Third West and Seventh South street.

### FIRES

The Magner carriage plant, Boise City, Idaho, burned; loss, \$3,000; insurance, \$1,500.

Fire in Bosche Brothers' carriage plant, Buffalo, N. Y., did \$25,000 damage on December 15.

The stock of vehicles and hardware of Frank Chamra, in Vining, Ia., has been damaged by fire.

The cabinet and buggy works of the C. W. Young Co., at Waycross, Ga., was destroyed by fire January 4.

Fire destroyed the silo factory of the Farmers' Handy Wagon Co., at Cairo, Ill., December 13, entailing loss of \$50,000; insurance \$31,500. Two million feet of long leaf pine, Oregon fir and California redwood burned.

The large spoke warehouse belonging to Foltz Mfg. Co., located in West Humboldt, Tenn., together with a lot of finished spokes, burned early December 19, entailing considerable loss. There was \$1,500 insurance on the property.

The Kimball building, occupied for twenty years by C. P. Kimball & Co., at South Michigan avenue and Harmon place, Chicago, was destroyed by fire the night of January 3. But a few days previous the company's stock was removed to its new building at East 39th street and South Michigan avenue. The building was owned by Mrs. E. H. Daggett and was valued at \$250,000. It was built in 1892. A seven-story building next door to the Kimball factory, the first two floors occupied by automobile accessory firms and the five upper floors being vacant, was damaged to the extent of \$5,000.

### NEW FIRMS AND INCORPORATIONS

P. A. Karuse has engaged in the vehicle and implement business in Albion, Neb.

Stringfellow & Walkenhorst have engaged in the vehicle business in Madison, Neb.

David Babb is about to engage in the vehicle and implement business in Lawrence, Kas.

B. L. Robinson is about to erect a new vehicle and implement house in Reinbeck, Ia.

Geo. Burley, of Boone, Ia., is about to begin the manufacture of vehicles in his new factory.

Frank Dallis is about to engage in the vehicle and hardware business in Chippewa Falls, Wis.

Chas. Swanson, formerly of Velva, N. D., has opened a new stock of vehicles, etc., in Minot, N. D.

Walbert & Timberlake are engaging in the vehicle business in the Frank Orr building in Arma, Kas.

The Guilford Farmers Union Buggy Co. has been incorporated in Guilford, N. C., with a capital stock of \$50,000.

The Fisher Vehicle, Woodstock & Lumber Co. has been incorporated in New Madrid, Mo., with a capital stock of \$5,000.

The Thomas-Wax Implement and Vehicle Co., Amory, Miss., capital \$10,000, has been incorporated by F. R. Thomas and others.

The Soule-Smith Co., Portland, Me., manufacturing and dealing in vehicles of all kinds, capital \$10,000, has been incorporated by Wm. E. Soule and Alfred T. Smith.

The Wayman & Murphy Company has been incorporated in Chicago with a capital of \$10,000 to manufacture and deal in wagons, trucks, etc., by O. S. Baylies, Robt. J. Kane and F. M. Kuellmar.

The John Immel & Sons Co., manufacturers of carriages, wagons, etc., has been incorporated at Columbus, O., capital \$60,000, by John Immel, Christiana Frederick, J. Immel, Robt. F. Immel and F. Henry Immel.

The St. Louis (Mo.) Ratican Coal and Contracting Co., capital \$10,000, has been incorporated by G. Muckermann and others, to buy and sell coal coke, also to buy, build and manufacture wagons, vehicles and flushing machines.

The Louis Edlich Wagon and Carriage Company, East St. Louis, Ill., has been incorporated, capital \$2,500, to do a general blacksmithing and wagon business, by Louis Edlich, Frank L. Edlich, John R. Edlich and John E. Purcell.

The South Sioux City (Ia.) Wagon and Box and Endgate Co. has been organized, with a capital of \$250,000. The company is composed of farmers living in that vicinity. W. W. Main, Sr., of Elk Point, S. D., will be manager.

### STEWART & CLARK CO. BUYS WARNER INSTRUMENT CO.

The Warner Instrument Company, Beloit, Wis., has been sold to the Stewart & Clark Company, of Chicago. The Warner brothers, A. P. and Charles, received \$2,000,000 for the business and many valuable patents.

The new proprietors are the chief competitors in the field in which the Warners were pioneers. J. K. Stewart and C. B. Smith, representing the Stewart & Clark interests, will reincorporate in Virginia. The new company is to be incorporated for \$11,000,000.

### CARRIAGE CLUBS' CHRISTMAS DINNER

The annual Christmas dinner of the Cincinnati Carriage Makers' Club was held at the Business Men's Club the evening of December 19. After a sumptuous meal, the members turned their attention to a ten-act vaudeville performance that had been arranged by the entertainment committee. A small stage had been erected at one end of the banquet hall, and no detail was lacking.

## OBITUARY

**W. P. Nolan**, well known to implement trade journalism, died December 10 at his home in San Diego, Cal. The deceased was born in Cincinnati, January 16, 1853, where he learned the job printing business, finally drifting into trade journalism. Later he became connected with Farm Machinery, of St. Louis, and published the first city directory of Louisville, Ky., finally establishing The Implement Age, of Philadelphia, some twenty years ago. A fall into a pit at Mammoth Cave, Ky., injured his spine, producing nervous prostration from which he practically never recovered. Mr. Nolan made several trips to Europe in quest of treatment, with little benefit. His spinal affliction became more acute, and at San Diego, Cal., his trouble reached the base of the brain, producing brain fever. He lingered for some six weeks, becoming totally unable to assimilate nourishment, and died Thursday, December 10. He was buried at San Bernardino on the 12th inst. Mr. Nolan had many friends and was a member of several branches of Masonry.

**George A. Taylor**, assistant treasurer Beckwith-Chandler Co., New York and Newark, N. J., died at his residence, 76 North Ninth street, Newark, N. J., December 18. Mr. Taylor was born near Worcester, Mass. Early in his business career he was associated with the Taylor Mfg. Co., Westminster, Md. In 1883 he was interested in various business enterprises in North Carolina, and remained there until 1895 when he became interested in and connected with the Beckwith-Chandler Company, the well known varnish manufacturers, with whom he remained as an active worker until his death. His illness was of comparatively short duration and until within the last few weeks before his death his friends were sanguine of his recovery. Mr. Taylor had many good and warm friends throughout the trade. Many years of his business activity were devoted to the southern states. Mr. Taylor's numerous friends will long remember him on account of his many good and engaging qualities, and his ability to seek and find the cheerful and the pleasant side of things, and his genial interest in things outside of his own particular province and work.

**Dan M. Hankins**, 58, for years the southern representative of the McFarlan Carriage Co., died at his home in Connersville, Ind., on January 7. For the past two years he had not been actively engaged in any business and for the past six months his health had been failing, though not rapidly.

**Walter W. Beers**, a pioneer vehicle and implement dealer of Rushford, Minn., is reported dead.

**M. D. Martin**, president of the Martin Carriage Company, at York, Pa., died December 31, from a complication of diseases. He was 53 years old. Mr. Martin was one of the promoters of the Guardian Trust Company, a banking institution at York.

**Daniel H. Northley**, 81, for many years in the carriage business at Damariscott, Me., died December 14, at the home of his daughter in Bath, Me. He retired at the age of 80 on account of failing health after being for many years the oldest active builder in the state.

**Mathias Bossett**, 63, died in Newark, N. J., on December 18. He was born in Germany and located in Newark in 1881, since which time he had been engaged in the manufacture of wagons.

**Dennis P. Gray**, 87 years old, who manufactured wagons for Frink & Walker, Illinois' pioneer stage line owners, was found dead in bed due to heart disease, on December 11, at his home in Rockford, Ill.

### MILBURN WAGON CO. FILES RATE COMPLAINT

A complaint was filed December 28 with the Interstate Commerce Commission at Washington, D. C., by the Milburn Wagon Company against the Ann Arbor and other railroads, alleging an unjust treatment in classification and rating on

vehicles shipped from Toledo, Ohio. It was said that the classification rate maintained by the roads on freight vehicles of all kinds, farm and dump wagons and carts and parts of such vehicles in mixed carloads, is unjust. The complainants petitioned for reasonable through rates on vehicles from Toledo to all points to which the roads apply through rates from Chicago, Milwaukee and Racine. They also asked for differential rates to Mississippi River crossings, similar to those granted on shipments made from Chicago, Milwaukee and Racine.

### RECENTLY EXPIRED PATENTS OF INTEREST TO THE VEHICLE INDUSTRY

#### Patents Expired December 10, 1912

- 550,945—Vehicle Pole. George S. Clark, Speedville, N. Y.
- 550,973—Thill Support. Martin V. B. Howe, Gardner, Mass.
- 550,987—Wagon Endgate. Alexander R. Maguire, Lynn, Mass.
- 550,994—Thill Support for Vehicles. John E. Miller, Newburg, N. Y.
- 551,015—Fifth Wheel for Vehicles. Thomas A. Watson, Bentonville, Ark.
- 551,075—Wheel Tire. James S. Copeland, Hartford, Conn.
- 551,088—Pneumatic Tire. Edwin F. Murdock, Oakland, Cal.
- 551,111—Thill Coupling. David J. Crosby and Daniel S. Keener, Uniontown, Pa.
- 551,126—Thill Support. Jas. Q. Lemmon, Latrobe, Pa.
- 551,146—Vehicle. Samuel M. Schnidel, Hagerstown, Md.
- 551,290—Hub Cap. Frederik Kramer, St. Louis, Mo.
- 551,291—Carriage Axle. Reinhard Mannesman, Remscheid, Germany.
- 551,293—Spring Seat Support. Horace Park, Columbus, O.
- 551,312—Spring Gear for Vehicles. Bruce M. Glasgow, New York, N. Y.

#### Patents Expired December 17, 1912

- 551,414—Vehicle Hub. Hiram L. Stuart, Rosston, Pa.
- 551,420—Coal Wagon. John E. Walsh, New York, N. Y.
- 551,481—Vehicle Tire. Christian J. Wagener, Pittsburgh, Pa.
- 551,516—Wheel for Carriages. James E. Warber, Cranford, N. J.
- 551,608—Wagon Brake. David A. Williams, Boulder, Colo.
- 551,699—Combined Antirattler and Thill Support. David F. Taylor, Wichita, Kas.
- 551,713—Vehicle Wheel Rim. George E. Blake, Greencastle, Ind.

#### Patents Expired December 24, 1912

- 551,828—Sectional Vehicle Hub. Robert F. A. McKinnon, Centerville, Wis.
- 551,886—Vehicle Running Gear. Seth M. Caborn, Caborn, Ind.
- 551,894—Thill Coupling. James Henretty, Staples, Minn.
- 551,956—Tire Tightener. Edward Gorsuch, Roaring Spring, Pa.

#### Patents Expired December 31, 1912

- 552,150—Fifth Wheel. Ezra B. Smith, Cincinnati, O.
- 552,233—Vehicle Wheel. Seth M. Caborn, Caborn, Ind.
- 552,307—Elastic Tire for Wheels. James Tonks, Birmingham, England.
- 552,402—Dashboard for Vehicles. Charles R. Steele, Opelousas, La.

#### Patents Expired January 7, 1913

- 552,569—Wheel Hub. Max Wysong, Maroa, Ill.
- 552,702—Self-lubricating Wheel Hub. Gustav Blechschmidt, Pekin, and Paul Blechschmidt, Rock Island, Ill.


The above lists of patents, trade marks and designs of interest to our patrons are furnished by Davis & Davis, solicitors of American and foreign patents, Washington, D. C., and St. Paul Building, New York City.

## Wants

Help and situation wanted advertisements, one cent a word; all other advertisements in this department, 5 cents a word; Initials and figures count as words. Minimum price, 30 cents for each advertisement.

#### PATENTS.

**Patents**—H. W. T. Jenner, patent attorney and mechanical expert, 608 F St., Washington, D. C. Established 1883. I make a free examination and report if a patent can be had and exactly what it will cost. Send for circular.



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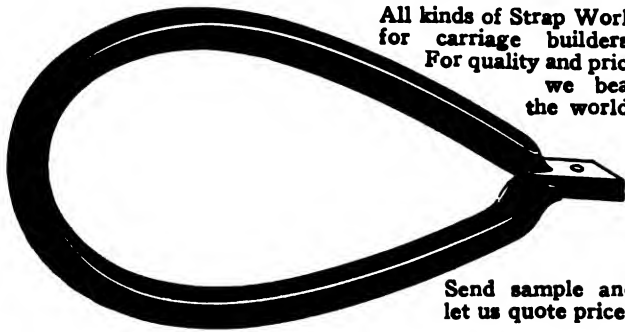
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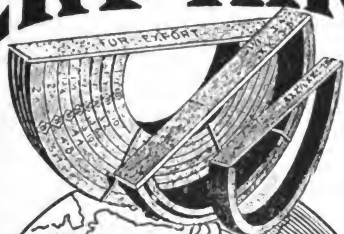
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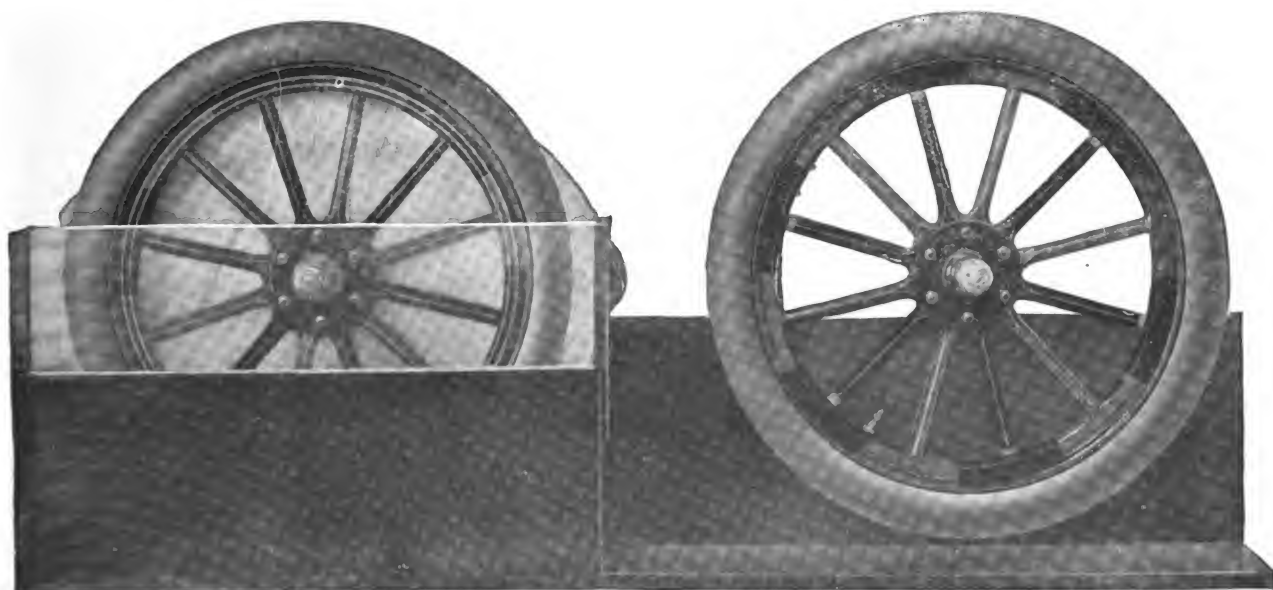
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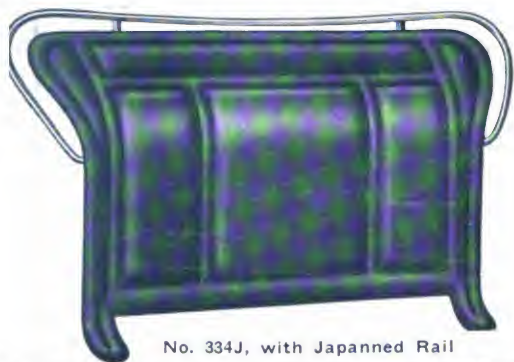


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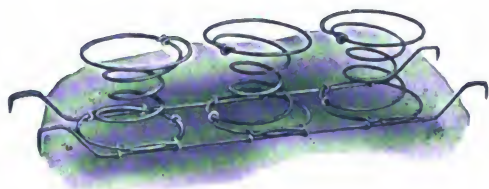
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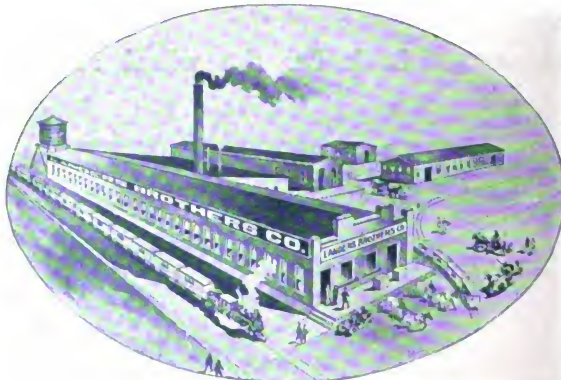


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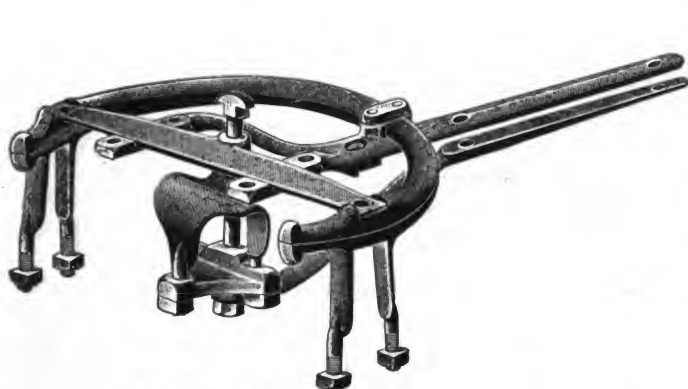
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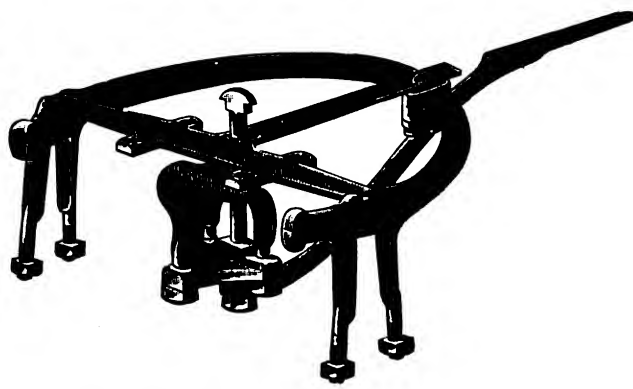
SEVERAL books have been written upon the vehicle, but almost without exception these have been compiled by coach builders or professional designers, for those who may be more particularly interested in the purely technical aspect of the question. In the present volume, Mr. Ralph Straus tells the story, in rough chronological sequence and from the historical rather than the technical standpoint, of the progress of the vehicle, from the earliest times until the general adoption of motor traction. Throughout the book, also, an attempt has been made to present, so far as is convenient, the various manners and customs of the world of traffic, and certain sections will deal with the successive legislative aspects of the carriage. The illustrations will be very numerous, adequately supplementing Mr. Straus' text, and no pains will be spared in the production of a volume which should prove of permanent historical value.

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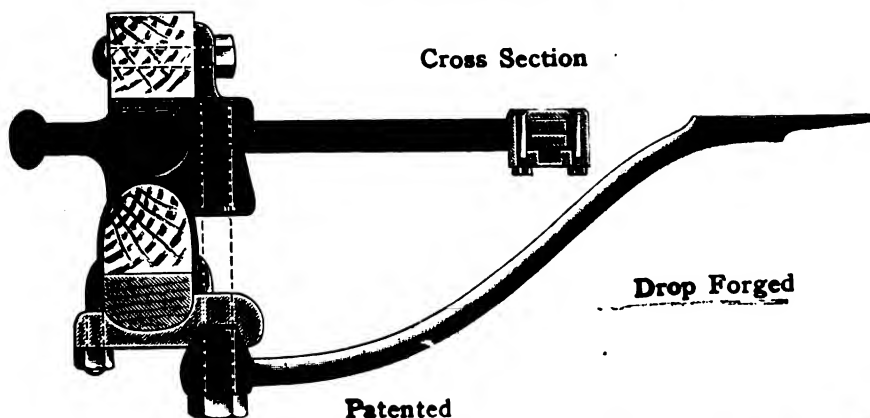
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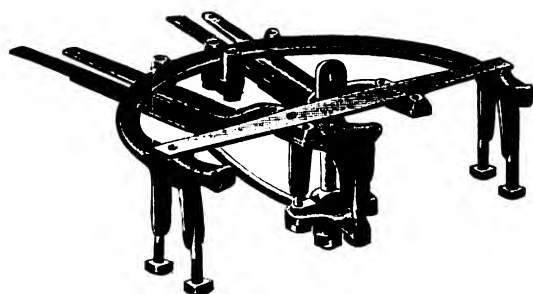
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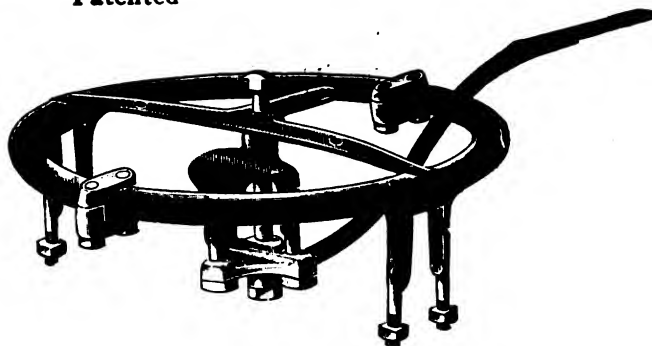


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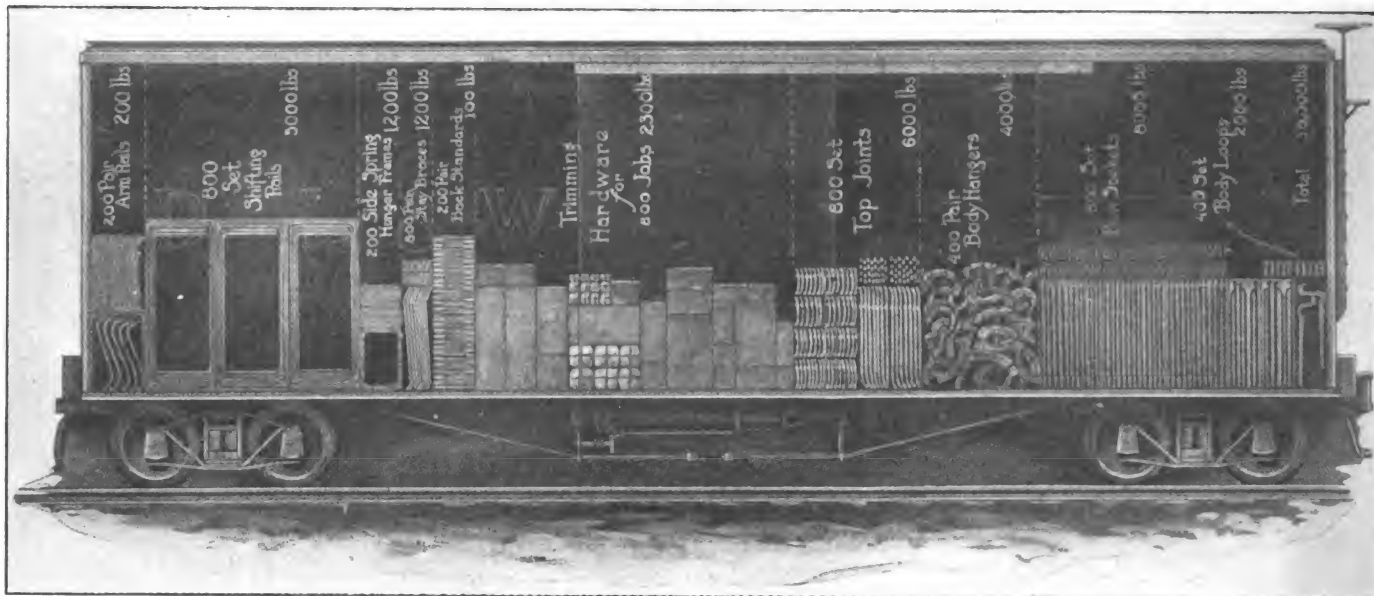
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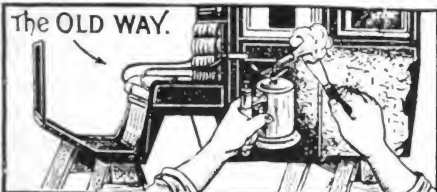
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# The Hub

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No. 11

## THE TRADE NEWS PUBLISHING CO. OF N. Y. Publishers of THE HUB

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### FOREIGN REPRESENTATIVES:

FRANCE.—L. Dupont, publisher of *Le Guide des Carrossiers*, 78 Rue Boissiere, Paris. Subscription price, 15 francs, postpaid.

GERMANY.—Gustave Miesen, Bohn a Rh. Subscription price, 12 marks, postpaid.

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## Types of Motor

This is something everyone who fusses over the building of a complete car gets interested in. If the interest is not carried to the point of partisanship the subject is lucky.

One of the curious aspects of this motor subject is the seeming conservatism in an art, or a trade, or whatever is most complimentary to call it, that is found, when the whole idea is novel, new, and should be radical. But there are mossbacks a-plenty.

Original thought is hard work. This accounts for a big lump of the inertia. Any mechanic who poses as an engineer can file, finish, refine something already designed.

We believe that is a chief reason why the four-stroke motor has held the center of the stage so long. It is easy to think up something as an improvement in valves, for instance, but it would mean the spilling of a lot of gray matter to think up the doing away with valves entirely. It would be almost as much of a shock as to

walk the streets and find you had neglected to turn up the bottoms of the trousers.

But competition will now begin to teach school, and we may expect to see important changes in the internal combustion engine, as well as changes in many parts of the vehicle that it has been thought were so complete that only refinements (?) of parts could be in order.

We should be far from expressing surprise to find the two-stroke motor the star performer in the near future. Some may awake also to the idea that all the talk about "fuel efficiency" is a rich humbug-mixture, or is the chatter of the parakeet—a bird whose fondness for roosting in sanctums is a pronounced appetite.

Simplicity of construction, evenness of torque, and steady pull at low speeds are three cardinal virtues of the two-stroke, and it lays the four-stroke affair on its back in those particulars.

Soon cost will be the slogan. The faddists will have faded, and the "game" will be no more. Then we will see an era of improvement and low cost that will make the auto car look less like a toy. The two-cycle motor will be making a noise in the land about that time.

## Wire Wheels Again

One of the novelties that attracted much attention at this year's Automobile Show was the wire wheel, which reappeared after long disuse. In the very early days wire spoked wheels were used on motor cars to some extent, but then they were an adaption from the bicycle. As the cars got heavier the artillery wheel was adopted. But in recent years improvements have been made in the manufacture of the wire and at least one type of wire wheels has been developed which has had enough use to prove its value.

The standard wire wheels for automobiles abroad are the Rudge-Whitworth.

Wire wheels are usually thought of as requiring clincher rims, but some have Houk detachable rims. This is an important feature; and as the spare wheel is always carried with an inflated tire it is a very simple matter to make repairs and get away again—in case of a puncture, for instance.

## Hard Woods Abroad

In England, American hardwoods for vehicle use are making good headway, though competitors arise from all parts of the globe.

Oak is faced by Japanese timber of a like kind. What is graded as No. 1 common white seems to have the mar-

ket to itself. Logs are falling back and cut stuff coming to the front. A trouble seems to lie in the shipper being careless in the grading of the stock. Better prices would result if attention were given to this detail.

Columbian and Oregon woods have a market, and much is expected of the Canal to advance such interests.

Canary whitewood, or poplar, is much in request, and holds the field when the price is right. Its competitors are cottonwood, tupelo and magnolia.

Ash and hickory go abroad largely, chiefly in the log, and high prices are secured for them. No. 1 common appears to be the favorite grade. Red gum lumber also finds a steady demand.

Cypress had a time of it getting a footing in the foreign markets, but it is now a favorite, at a price.

Our redwood is much liked on account of its width of plank and freedom from knots. Its only competitor is kauri pine.

The same complaints about the careless or thoughtless methods of the American shippers are as prevalent as ever. Few seem to learn the lesson.

## Cheerful Phrases

Prof. Eliot, of Harvard, says a "successful man is one who lives an honorable, independent and useful life."

Ask the ordinary commercial wayfarer for his definition of success and he will say Success is the Securing of the elusive \$imoleon. Queer how the concept changes with the point of view.

The always alert Wood Worker says: "The new year seems to be disappointing those who made pessimistic predictions about the importance of being conservative. On practically every side there seems to be an increase in industrial activity; and even the railroads and car shops, notwithstanding their threats of going slow, are reported as making purchases for quite extensive work."

This is comforting, but alas, not true!

## Hub's Olympia Drawings

With this issue Mr. Mattison's review of the distinguished products seen at Olympia comes to an end.

The examples presented for illustration and description were the result of careful inspection and choice at the hands of an expert in the profession, hence only the cream was skimmed.

This ought to prove a complete advantage to all who want meritorious novelty, and advance in the art devoid of freakishness.

The journal could have been filled with pictures lacking discriminating choice, but it was not thought worth while to present any examples but the best.

## ROLLER BEARING CO. ORGANIZED AT HAMILTON, OHIO

The George Automatic Roller Bearing Co., with an authorized capital stock of \$550,000, has been organized at Hamilton, O., by C. E. Heister, George T. Reiss, S. M. Goodman and C. R. Greer, of Hamilton, and Walter H. Miller and Edward Ritchie, of Cincinnati. The factory will be erected in Hamilton this spring.

## EUROPEAN NOTE AND COMMENT

We find in *The Motor* and other journals some matters that will be of interest to the vehicle man interested in assembling automobiles, and we digest some of it herewith.

The relation which a perfect balance of reciprocating parts has to the quietness of running of an engine impressed itself forcibly when making a brief examination of a four-cylinder slide-valve engine. When this was running light, at a speed estimated at 500 revolutions per minute, it was necessary to be very close to the engine to know by sound that it was actually running. On opening the throttle, however, and speeding up the engine to something between 1,200 and 1,500 revolutions per minute, it seemed that there was quite as much noise and vibration as with any standard poppet-valve engine, and this goes to show that even the sliding valve principle is not a complete solution of the silent engine problem.

The lighter steel piston is now being better appreciated. The results, in the shape of silent, vibrationless running at very high speeds, that can be obtained with the perfectly balanced rotary system of the electric motor or steam turbine one does not expect to obtain with any form of reciprocating engine, but that there is scope for investigation into ways and means of improving the balance of the standard four-cylinder gasoline engine few will question.

## HIGH WATER MARK

That the automobile industry has reached its high water mark and has begun to settle down to a more stable basis is the opinion of H. H. Franklin, president of the Franklin Automobile Co. He declared that there has been a great overproduction on the part of many manufacturers of cheaper cars and that the reaction has set in. But he is not one of those who believe that consolidation will remedy such a state of affairs.

The great demand has been for a cheaper first-class product, he said, and the only way the prices could be brought down was to manufacture in large quantities. As a result the market has been flooded with cheap cars faster than the trade could absorb them, and the strain has forced a number of concerns to consolidate. The solution of the problem is not general consolidation, but a slowing down and adjusting the output more nearly to the needs of the market. The time for doing that sort of thing has arrived, and a general subsidence is observable in the scramble among manufacturers to surpass each other in respect to volume of output.

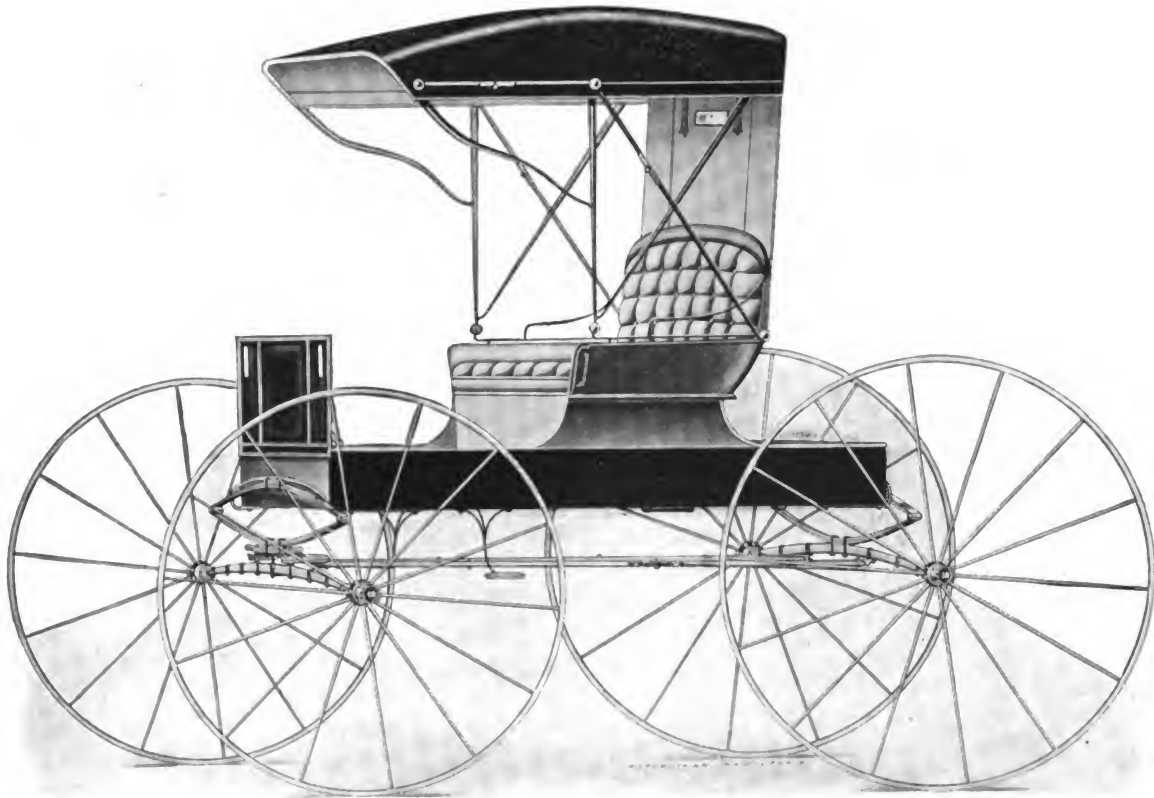
The makers of higher-priced cars have fared better because they have proceeded conservatively and not tried so hard to force the market. The cheaper cars will continue to be in demand, and the smaller towns and the farmers will provide the best market. The motor truck is the feature of the trade at present.

## A PUNCTURE-PROOF TIRE

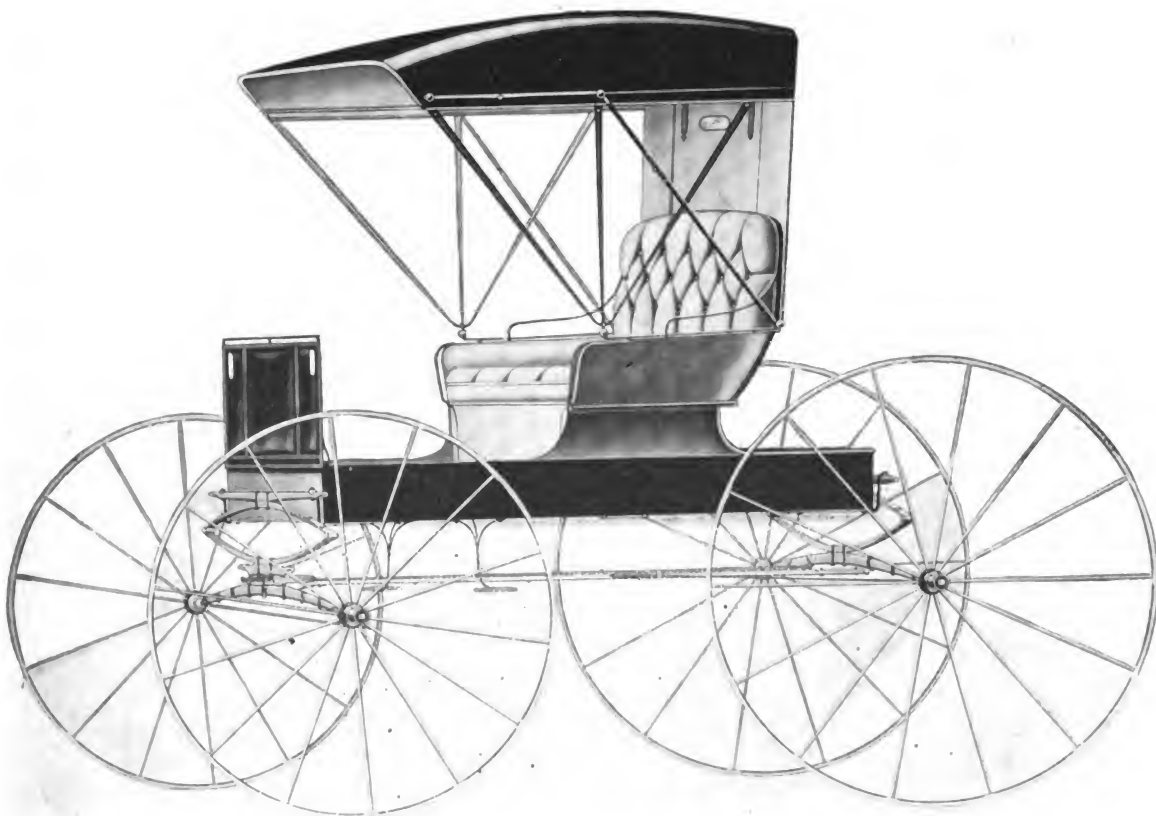
A resident of Havre, France, has recently patented and put into practical use an invention for preventing punctures in pneumatic tires which he calls "a puncture-proof metal band for pneumatic tires."

The chief feature of the invention is a band of canvas covered with small hexagonal metallic disks. These disks are arranged to fit close one against another, and are riveted to the canvas so as to form a flexible armor. The band of canvas thus prepared is placed in a sheath of rubber. In order to safeguard the tire this sheath is placed between the air tube and the outer cover. In this way puncturing the air chamber becomes impossible, and even cuts in the outer cover are in no way harmful. Experiments have shown that there is considerably less heating of the tire and that resilience is the same.

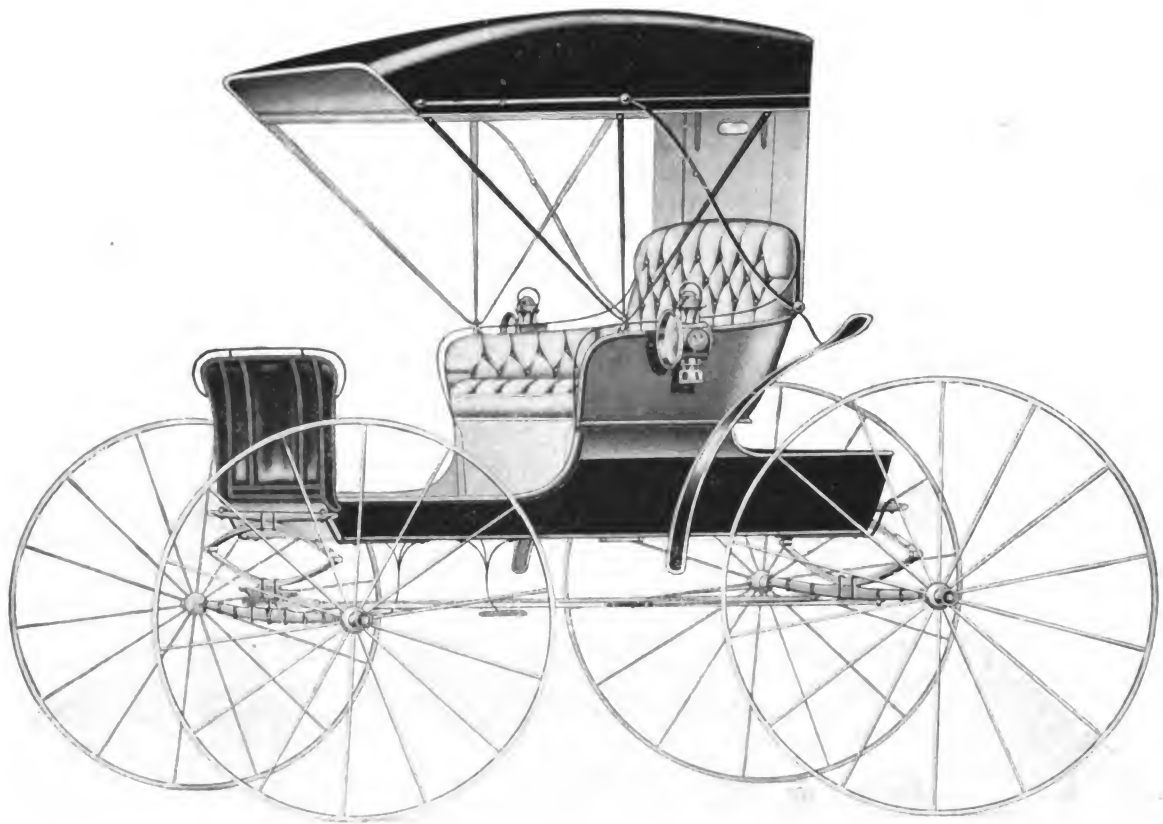




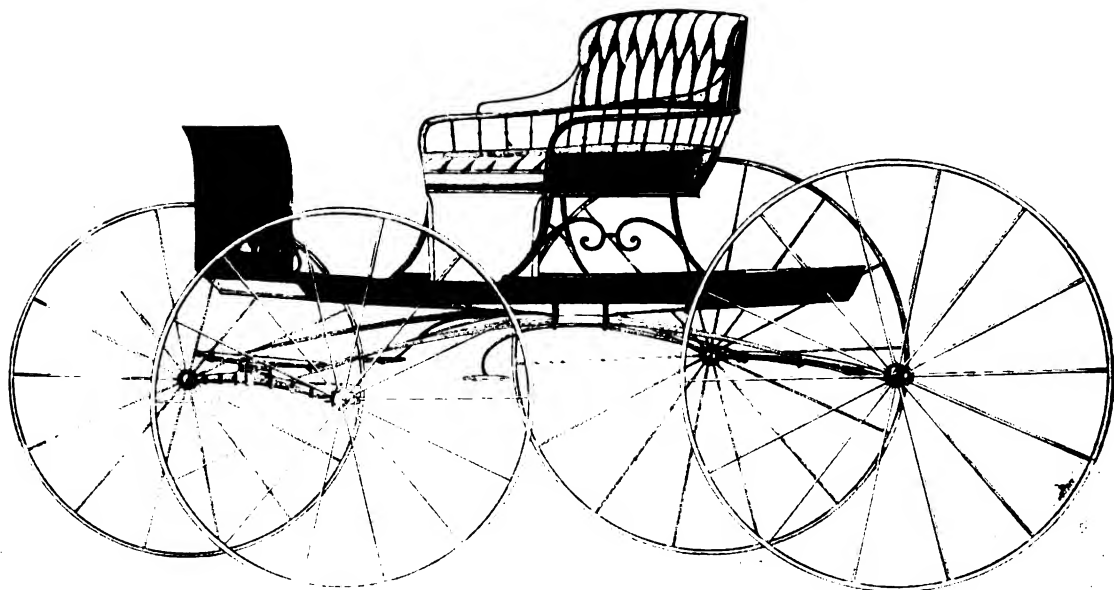
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Made by F. A. AMES CO., Owensboro, Ky.



**DROP BACK BUGGY (Northern Trade)**  
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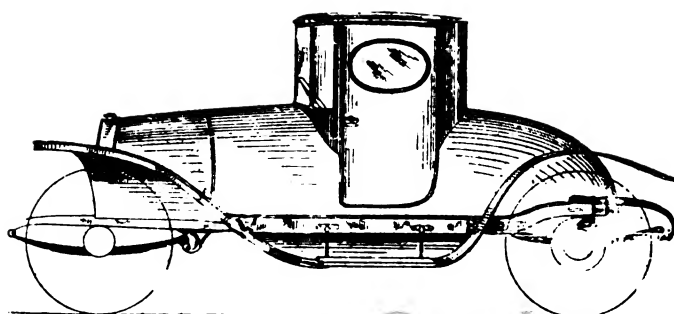
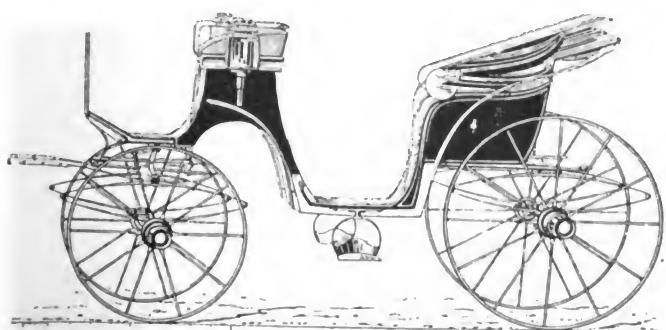
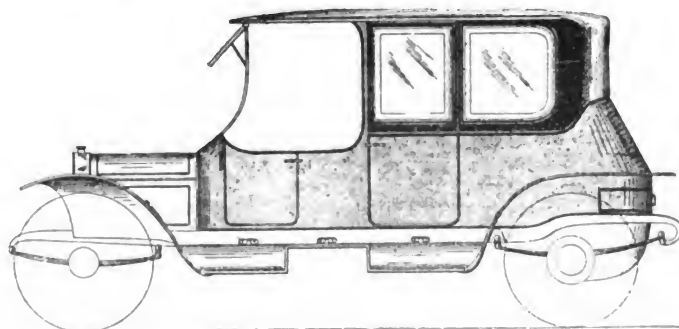
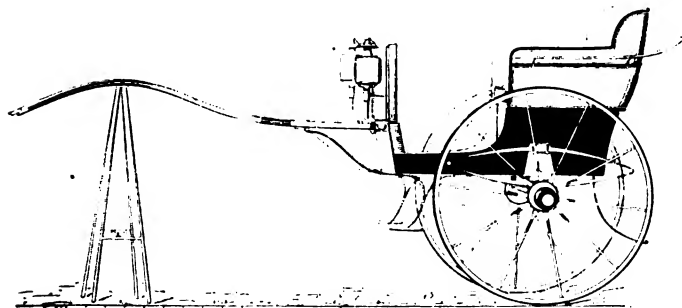
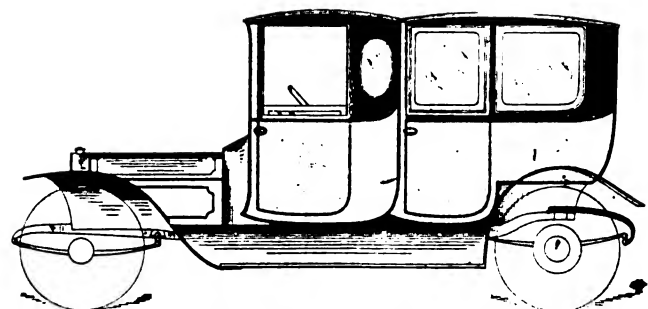
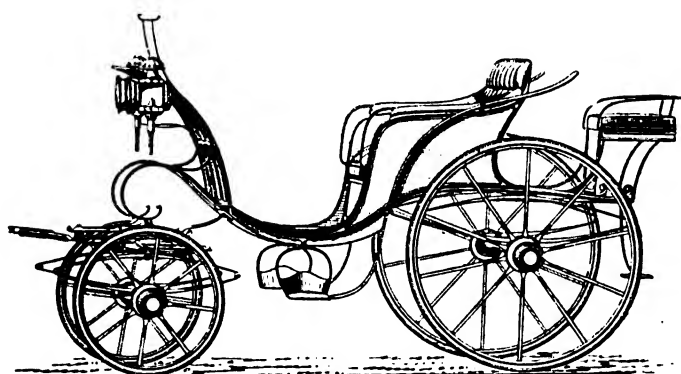
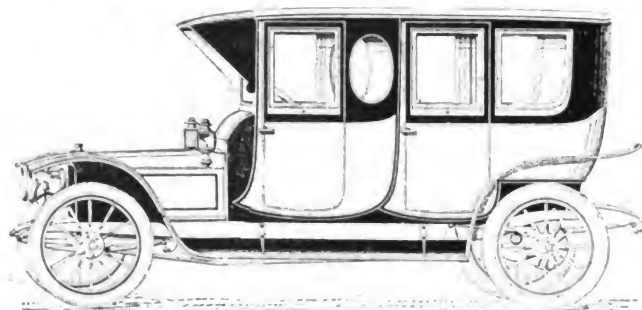
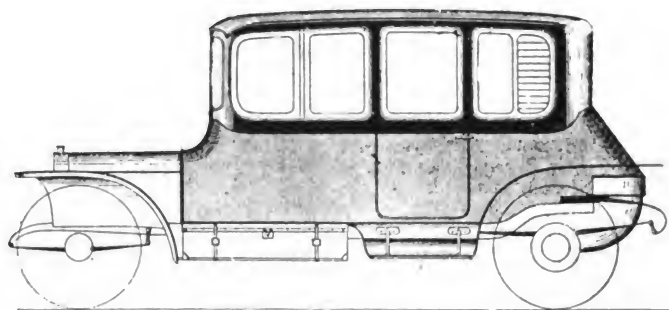
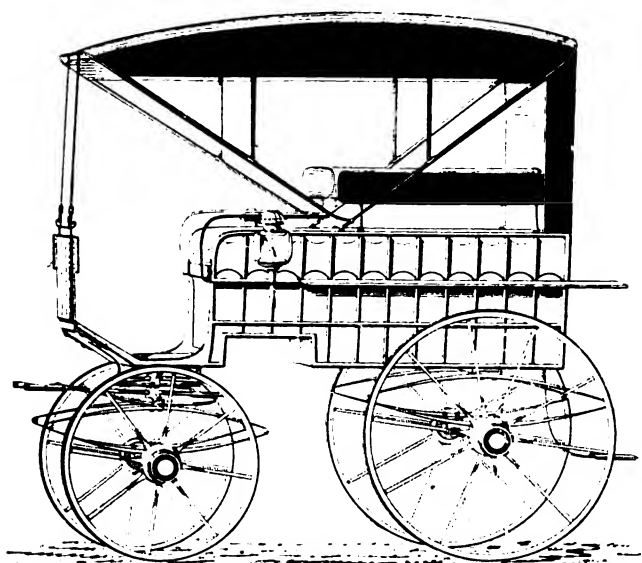


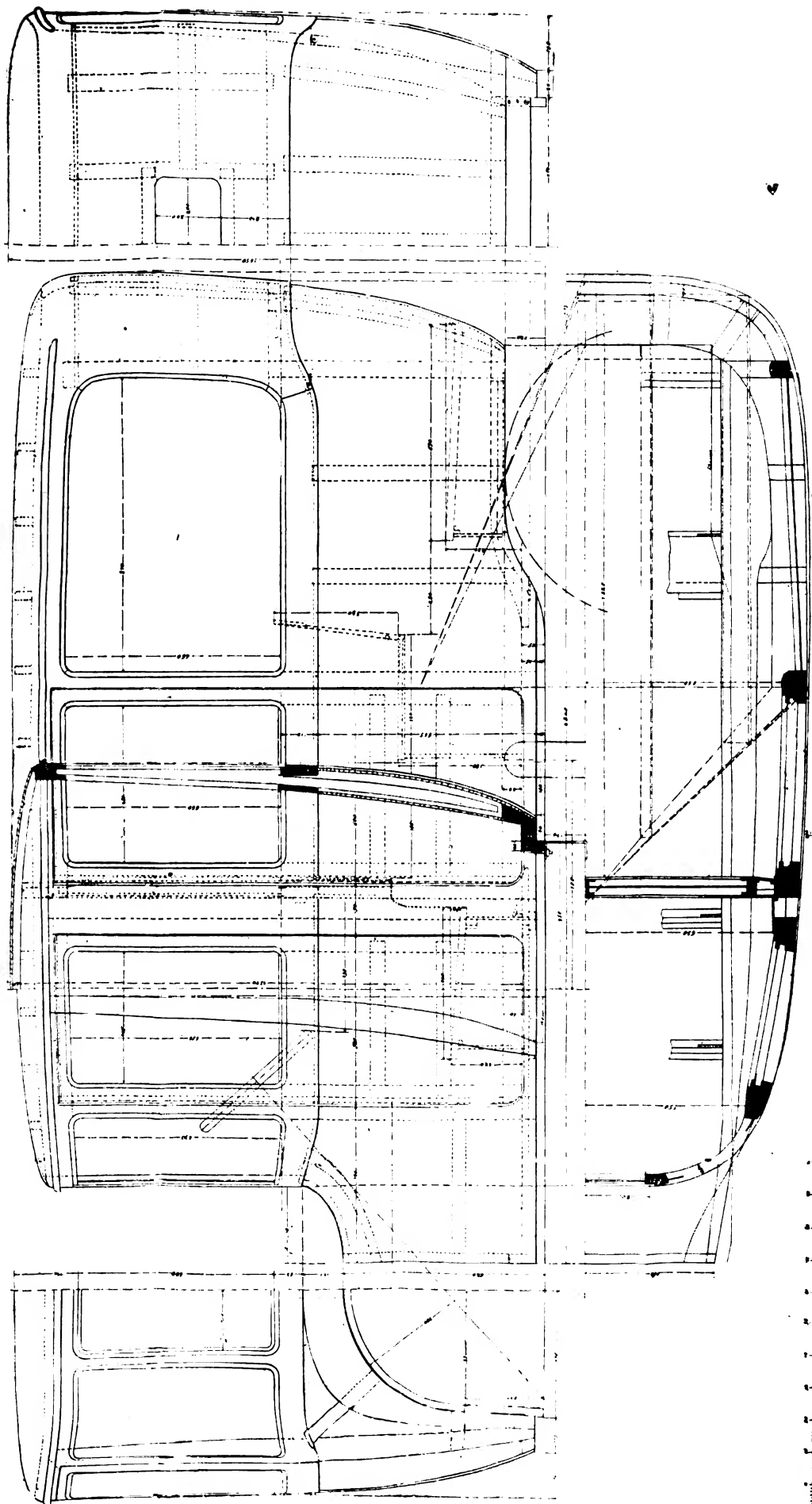
**"FAVORITE PHAETONETTE" (Northern Trade)**  
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## A GROUP OF LATE FOREIGN STYLES





WORKING DRAWING OF LIMOUSINE—From Der Centralblatt

## ECHOES FROM THE OLYMPIA SHOW

By Thomas Matteson, The Hub's English Representative

Throughout the exhibition the limousine bodies came in for greater thought at the designers' and inventors' hands than any other, the limousine being a closed body, which is a defect in its qualities, inasmuch as there is no opening arrangement beyond what can be obtained in the door and quarter glass light in their opening and closing arrangement vertically.

But motoring in its needs must be elastically catered to, and to overcome the exclusively closed body in the limousine design many exhibitors have adopted the half head quarter in making these very expensive cars. In this, it is impossible to curtail excessive projection when the head is folded and in open formation. Foreshortening is got at by using a high hinging center on the back light pillar, thus neutralizing the extension of the quarters fall. This method was widely used in the heavy cars of the limousine type throughout the exhibits.

In the highly finished cars exhibited by Cole & Son, of 92 Kensington High street, London, this improvement was finely

in curved formation to follow the use of the bonnet shield. The bonnet itself is coned on its top surface which helps to throw off wind pressure.

The car was painted and highly finished in a rich shade of French gray and luxuriously upholstered to match, and appointed in all the latest accessories of comfort and necessity.

In Plate A the car is shown in its first position as a closed body, while Plate B shows the body as an open touring car. It will be seen in this drawing what an amount of ingenious and exact mechanism has been evolved in working the problem of the head out successfully so that the car may present a complete appearance in the positions of a closed or open vehicle.

The hinges were made with brass cheek plates to all the jointings. The plan effectively prevents weather from making its way into the end grain of the pillaring and also ensures neat and close jointing when the head is up.

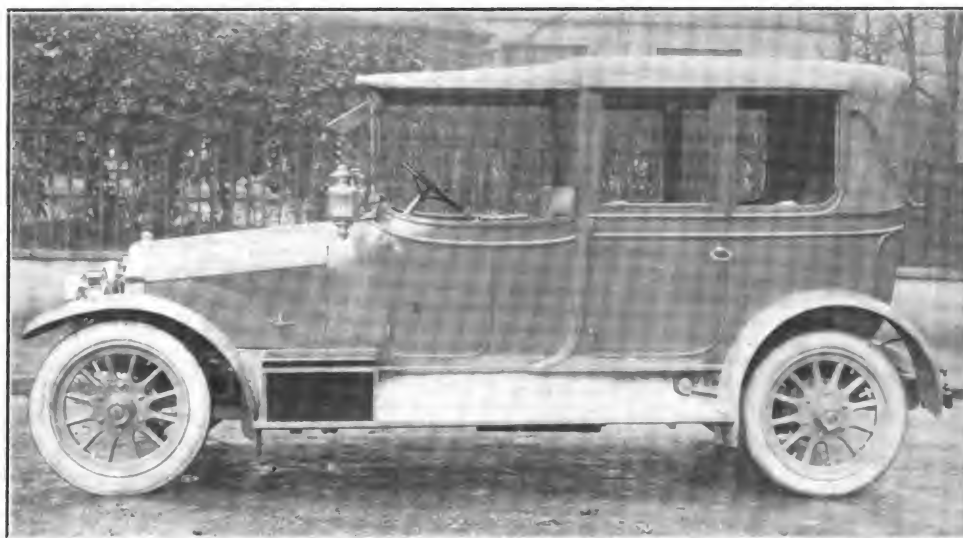


Plate A—LIMOUSINE CABRIOLET  
COLE & SON, London, W.

worked out. In the plate drawing A will be seen the smart and cultured design of a limousine body possessing all the closing qualities of this heavy type while it is fitted with a mechanism that provided for the full advantages of an open touring car.

The hind body was level sided, and cabrioled in all its quarters. In the design there is no extravagant spacing of quarters, but a rich somberness that demands a cultured workmanship in building and finishing of a high order.

The front chauffeur's quarter is built into the chariot pillar as in a brougham body, allowing the pillar to project from the quarter's side. The pillar is plinth bottomed and lines into the bottomside which gives a firm upstanding setting to its position.

The back quarter is margined off on the elbow point from the rounding corner by an ogee moulding which is snugly lined into the bottomside. The belt panel is spaced off with half round mouldings, while the front quarter panel is made

The neat mechanism of this head was typical of all the cars of this class throughout the show.

Plate C shows a smart design of limousine landaulette. The quarters of the body are level sided and plain throughout. The belt line being panelled on the door end back quarter and cut up into elbow proportions on the chauffeur and extreme back quarters, thus assimilating the moulding proportions in telling harmony. The front and side lights are very spacious, the hind quarter light drops into the body quarter when the half head is down.

The exhibits of Messrs. Cole were fitted with artillery wheels. This type of wheel is more in harmony with coach building production than wire wheels that are exclusively used by some large motor firms.

Sir W. G. Armstrong-Whitworth & Co., of Clayton, Manchester, showed some fine specimens of their heavy cars. This firm are world-wide famous engineers. They not only make



guns, but build ships and bridges, while they are in the first line of motor engineering and chassis making.

Plate D shows a fine type of heavy limousine landaulette body, which is level sided and plain quartered throughout. The belt line of the body is serpentine in undulating curvature from the back elbow point to the shield quarter of the bonnet.

lighting being very spacious from the top quarter and door which, by the way, was hinged the wrong way. A door should open against the wind and not facing it.

The body was level sided and plain quartered; the belt was stream lined from the elbow point to bonnet quarter, a long, nice, undulating curve being obtainable owing to the length of



**Plate B—LIMOUSINE CABRIOLET (Head open)**  
**COLE & SON, London, W.**

The mouldings are half round, and cleanly corner curved on the door and quarter waist rail panels. The body was shorn of cutting up elaboration, which renders the finish to be thrown up in very high grade craftsmanship.

The door was unusually wide; doubtless the object was to obtain more light and to make getting in and out easier, but it was hinged the wrong way. The back quarter light dropped into the quarter when the head was down.

the body, the only apparent defect being in the disproportion in the depth of the door belt to its continuance on the body quarter. The quarter glass dropped into the body for the fall of the head, or could be used with the head up and the glass down, the head mechanism being specially adapted to this style of body.

The car was richly finished in the painting and trimming, and a fine example of good coach making and first class engi-



**Plate C—LIMOUSINE LANDAULETTE**  
**COLE & SON, London, W.**

The car was a fine upstanding vehicle painted blue, and upholstered in fawn leather in chauffeur's seat, and fitted with all the latest accessories for the perfect equipment of a full touring or family car.

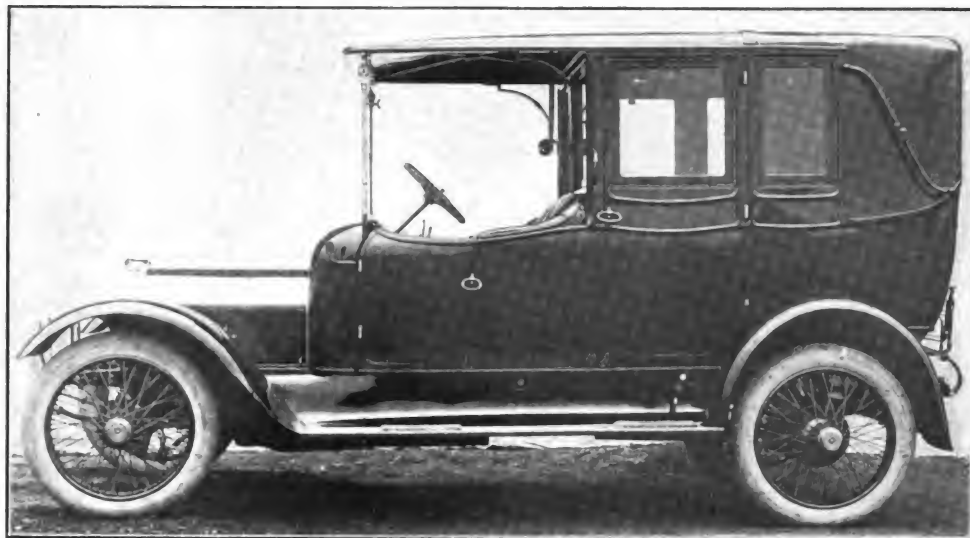
Plate E shows a very handsome saloon car, fitted with landaulette head behind, the levering joints being concealed, the

neering. The body was designed to carry six behind and fitted up with chair seating and appointed in every detail to the necessities of a saloon touring and family car. The chassis were Armstrong-Whitworth and splendidly balanced on the wheels, upon which a high speed could be used without swerving or long rolling which is the result of bad suspension.

The Olympia show was fruitful in showing excellences and defects from the coach builder's standpoint of weight in body building and in the suspension of chassis, also in the wear of tires, for these are the foundations upon which the pleasure and life of a good car stands and, of course, with engineering to match.

being pressed at a shooting angle instead of bearing the whole weight vertically as they should and are meant to do. Some chassis give more clearance between wing and wheel, showing ignorance in the strength of springs.

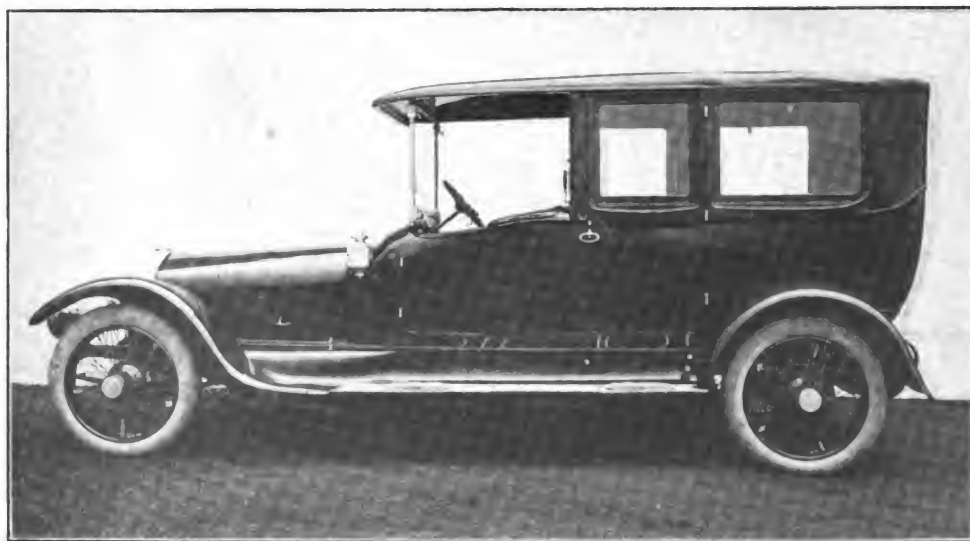
There is great room for an improved system of motor car suspension. The chassis are the product of engineers who do



**Plate D—HEAVY LIMOUSINE LANDAULETTE TOURING OR FAMILY CAR**  
SIR W. G. ARMSTRONG-WHITWORTH & CO., Manchester

In the first place it is quite possible to build heavy bodies much lighter in weight than they are at present turned out of hand. Weight is a damaging factor to the working life of an engine, and a drag upon the working efficiency of tires. These defects are equal to working upon a climbing gearing when a normal effort in propulsion is all that is required in the speed.

not thoroughly understand traction suspension in road vehicles. There is too much of the stationary engine formula about the motor engineer for him to reach an equal excellence in the production of a perfect chassis. In the matter of brake power there is also a field for improvement; the present retarding mechanism makes violent attacks upon the internal machine life of a car. This racking and wrecking power could be vastly



**Plate E—SALOON TOURING CAR**  
SIR W. G. ARMSTRONG-WHITWORTH & CO., Manchester

In the matter of suspension the hind wheels are invariably too far under the body or the body is too long for the length of chassis, the result being that the hind springs "duck under" from the top half owing to the angle of the weight being too far away from the center of the wheel, and at the same time the weight being too great for the springs and their position to it. This defect is increased through the pliancy of the tires

reduced by a more scientific and direct method of bringing to gravity a car's speed than the universal methods at present in use.

Technical education should now be able to prove itself of immense value in the construction of bodies in reducing weight and in evolving a new life in design, and in showing a wider

individualism than permeates the British motor body building industry at present.

In these important elements we are short—though at the same time we do not play second fiddle to foreign rivalry—for to know one's weaknesses is a faculty of strength; to correct them, a duty.

The "Darby and Jones" designing so characteristic of English trade journalism in pre-motor car times, when it was quite the common thing to find drawings with bodies suitable for 16-hand horses with shafts to them suitable for a 13 or 14-hand cob, and four-wheelers with undercarriages under which the wheels would not lock are not the mediums for today. These abnormalities were the productions of men who knew nothing whatever of practical or scientific coach making, and who still have the presumption to hang on to the skirts of the trade as "leaders," hence their goal is that of piracy, and the reproduction of other men's designs by which the trade is kept at a stagnating level so far as they act as educational and designing forces.

It is therefore to the advantage, and to which the trend of motor body design is making, for firms to keep their own designers to fashion their own lines or work through those who are motor body designers, which does not only mean the production of special lines, but the possession of knowledge and experience in practical and scientific construction, which the wreckage in body work too plainly exposes to be lacking.

The illustrations of the Olympian exhibits which The Hub has published distinctly show individual work in style, and the slavery of a levelling sameness on the wane, the leaden figures of inanimate lines have withered and a new life is in bud.

The smaller type of car was well to the front, a very pretty style of body being shown at the Stanley stand. The "Stanley" is a steam car and has a growing business, though it has the whole gasoline engine trade to fight against. Without doubt steam has a place in the propulsion of the motor car.

The cornering of gasoline and its large demand will act in the development of companion agencies in attaining power, and a type of engine to work them. Invention in the ways of the motor will not be at its zenith for years to come yet; and it is just possible, as well as most probable, that the next Olympia motor car show will have made very rapid strides in the design of bodies and engines.

The criticisms that have found expression herein on cars at the show are made in all sincerity, and not from any captious motive. The many readers and subscribers to The Hub throughout the world will no doubt be gratified for the opportunity of seeing in illustrative design "how the world wags" in motor car progress as shown at Olympia, the mecca of the world's manufacture in this particular industry.

The writer begs to tender his best thanks through The Hub to the eminent firms who so generously supplied him with drawings of their exhibits for this review.

Such generous response to the favor of a foreign journal stands as a strong reply to foreign rivalry from whatever quarter it may come.

### ANTIQUITY OF THE LATHE

From an early treatise by Moxon, published in 1680 in England, it is certain that at that time the lathe was developed to a point where it was possible to turn out high-class ornamental woodwork, including oval shapes, but anything more than this was beyond its power until the slide rest was invented. Devices for clamping the cutting tools in a fixed position were employed comparatively early, but the first appearance of the slide rest dates from 1772. Complete drawings and details of an excellent slide rest were given in that year in a French encyclopedia. As early as in 1741, Hindley, a York clockmaker, produced a screw cutting lathe with change gears. This, of course, was a very small machine, and in fact the clockmakers of that day seemed to have a monopoly of mechanical ingenuity.—*Machinery.*

### FITTINGS

For richness of effect in conjunction with the precious metals, and more appropriately with silver, in a modern motor carriage, there is nothing which has so fine an effect as the mother-of-pearl fittings which are to be seen on the finest fitted carriages. The rich lustre and varying reflections of light are not to be found in any imitation, no matter how closely the resemblance may be carried. Modern dressing by machinery of the shells has enabled the workmen to bring out hitherto unattained lustrous effects in this material, and the play of light upon the relatively broad faces of the door pulls varies with every movement of the car, revealing the pearl-like lustre. These effects are produced by the fine layers of the shell which are deposited by the mollusc, and the more uneven the inner surface of the shell the more beautiful the effect when polished. The canteens and ladies' cases are sometimes faced with the material, and where tastefully arranged with contrasting precious metals judiciously treated, the effect is often beautiful.

Tortoiseshell is often employed for the purpose of embellishing the plain and slightly-curved surfaces of canteens and cases, and more recently it has been successfully employed in the covering, as with a veneer, horn slides and door pulls. These latter are shaped slightly oval in contour and section, and the tortoiseshell is laid on and inlaid with silver and gold, producing a very rich effect, suitable for the setting off of finely polished woods. The working of the shell is very delicately done, and the thin edge of the veneer can be distinctly traced over the edge of the horn underneath. Tortoiseshell is only about  $\frac{1}{8}$  inch in thickness, and itself could not be used for such a purpose, the combination of the two horn-like substances making an excellent and efficient fitting. These fittings in the natural materials are not in general use, the initial cost of the material itself, and the very fine workmanship necessary to complete the work making the finished article, frequently with fittings of solid silver-gilt, very high priced.

### GEORGE S. LANDERS

The sad news of the untimely death of Mr. George S. Landers, on December 24, at Tunnel Hill, Ga., where he was interested in the Rocky Face Silicate Sand Co., which he was developing to be used in the manufacture of glass and cement, was a great shock to his many friends.

In passing through a tunnel he was overtaken by a passenger train, and while he had the presence of mind to lay down by the side of the track, he evidently was struck by the rear end of the train, as he was found, after the train passed by, with one hand laying over the track and a slight fracture on the back of his head, from which he remained three days without gaining consciousness.

Mr. Landers was 44 years of age, born in Cambridge, Mass., in 1868. He was one of eight sons, seven of whom grew up to manhood.

In 1888 he founded the firm of G. S. Landers & Co., out of which Landers Brothers, and later Landers Brothers Co., developed. He had a common school education and went two years to high school, which he left to enter the employ of the old carriage hardware firm of Porter & Wooster, Boston. He, however, continued his education in the Boston evening high schools. When they discontinued business he went with Little & Larkin, of Merrimac, Mass., leaving them to go with English & Mersick.

Mr. Landers was a salesman of considerable ability and traveled throughout the United States for 25 years, and of late had been in mining and cement interests. He was noted for his temperate and pleasant disposition, and left a widow and two children, also a large acquaintance of friends to mourn his loss.

The funeral services were held at the family residence in Somerville, Mass., on December 29, and the remains buried in the family lot at Milton.

## TRAVEL NOTES—PITTSBURGH

There is little doing in the light carriage line and there does not seem to be any immediate prospect of a change for the better. What driving there is happens to be more in the outskirts of the city, in the parks and the country districts.

There is considerable work in the wagon and truck trade, however, although that is not as strong as it should be. Repair work is the mainstay of the shops, both for wagons and automobiles.

This is one of the worst cities in the country on the wear and tear of carriages, wagons and automobiles, owing to the rough and hilly streets and the nature of the pavements, which plays havoc with anything of poor material. Vehicles are thus put to a hard test in this city and all wheels, bodies and other parts must be of the best material or they will not give satisfaction. And it takes a local manufacturer to understand the needs and defects of the materials used, as well as the topographical conditions. There are hills in every direction and the streets are narrow and uneven. There are some eight inclines or lifts here to carry passengers and the horse and wagon up to the top of Mount Oliver or Mount Washington. When you get to the top the roads are bad and the entire outfit must be of the best.

On account of this feature mules are used more than horses, as they can draw heavier loads up hills, are more willing workers and last longer.

During the recent flood, water came up in all the down town business districts and the people stand for this year after year and nothing much done. It could easily be corrected, but it is soon forgotten till the next one comes. Boats were used in the down town districts to carry people to and fro. Miller's wagon shop in Carson street and C. West & Co., Duquesne way, had the floods all around them and the latter place was inundated to about four or five feet. The horse auction stables on the north side near Federal street had to quit business for several days.

One thing that will help traffic some is the removal of the hump, a hilly condition in Fifth avenue, Wiley avenue, Grant street and other streets.

Martin Schnabel started a wagon and carriage shop in 1860, which was taken over at his death by the son, G. A. Schnabel, the father of the sons doing business today. G. A. Schnabel died three years ago and the business is now conducted by the sons, John A. and Walter M. Schnabel as G. A. Schnabel & Sons, at 3061 Penn avenue. The business was started during the civil war as a blacksmith shop and shoeing mules, but of late this firm has largely gone into the building and repair of the automobile commercial truck and limousine pleasure bodies. The shop now employs 42 hands. A charter has been applied for to form a corporation, with a capital stock of \$75,000, officered as follows: W. M. Schnabel, president; John A. Schnabel, superintendent; C. F. Tiers, a new man in the firm, to be secretary and treasurer. An extra building has been taken to be used as a paint shop. Plans have been drawn to build an entire new plant, but they have not been fully developed as yet. It will cost considerable money and will be a modern factory.

The plant of the Liggett Spring & Axle Co. is busy on the lines for spring trade, making carriage, wagon and automobile springs and axles. The south is said by them to be the big field for the carriage and wagon trade, but it is not strong there at the present time. Raw materials, iron and steel, are advancing, as well as labor. Some of their competitors are using oil to burn in their plant and have been hard hit by the advance in oil, while this firm has its own coal mines and gas wells and has an advantage.

"Kip" Selbach, of the Pausch-Selbach Wagon and Auto-

bile Co., of Columbus, Ohio, was, up to a year ago, in baseball for a decade. He played as catcher, third base and in the field, and in 1904 was a part of that famous world's champion outfield at Boston, under Jimmy Collins, Selbach, Buck Freeman and Chick Stahl. If the wagons he turns out are as good as the baseball service he gave, then they will be able to travel some distance without breaking down.

L. Glesenkamp & Sons Co. has moved from Penn avenue to 319 Liberty street. The corporation is still building livery carriages, but the main line is automobile work. Bodies, and a lot of repair work is done, but no finished automobiles are sold. Individual motors for each machine are a feature. Several novel jobs are on hand now; one is for a large automobile for a dramatic company, which will tour the south. The company of eight or ten people will live, eat and sleep in it and will have berths similar to Pullmans. Report bright prospects for the spring trade.

John Deisenroth has changed the name to the Deisenroth Wagon Co., at South Eighth and Bingham streets. He has taken up the automobile line of work.

Mr. Wangler, who ran the shop for years at 628 Tripoli street, died a short time ago, then the son Charles Wangler ran it. He has now sold it to August Moeller, who was traveling on the road for the Pittsburgh Hide & Tallow Co. Mr. Moeller has been doing considerable automobile work and he expects to enlarge on it.

The H. Lange Wagon Co., 506 Second avenue, says the wagon trade is quiet and the automobile truck has the best of it. Mr. Lange says many of those using these trucks say they cost considerable more than a horse-drawn truck, but still they add to their equipment. The country districts are not affected so much and carriages and wagons are used more. This firm has two plants. The other plant, at the East End, has taken up the building of automobile bodies.

S. Ward, 846 North avenue, has been in business 46 years, and says he has a lot to learn yet. This is the slowest year during the past seven years.

Albert Kaelin has succeeded Mock & Kaelin, Mr. Mock retiring, at 1423 East street. He builds wagons.

F. H. Evans is running the wagon shop for Mrs. Catherine Evans, the widow of H. J. Evans, who died in July. This shop is located at 314 East Reliance street.

The Pittsburgh Harness Supply Co., of 325 Penn avenue, has been doing considerable carriage business, but business is not strong. Does a large mail order business with the country districts and has added farm machinery, supplies, etc. Has recently incorporated the Manufacturers' Distributing Co. and increased the capital from \$65,000 to \$125,000 and will carry on the mail order idea larger than before. Has issued 300,000 of 144 page catalogues, besides 50,000 of a supplement catalogue. The catalogue shows all styles of wagons, carriages, farm implements and machinery, harness and saddle goods and all accessories. It is a big undertaking.

### A NEW ENGINE IDEA

The new German Fischer engine is attracting notice. In the first place, it is quite different from the generally accepted idea of a sleeve-valve engine, as it is arranged on the monobloc principle, though even in this respect there is a difference manifested. Each cylinder trunk is fitted with a disc-shaped head of plain metal; that is to say, there is no jacketing in connection with it, and the center portion is extended so as to constitute a cylindrical housing for the sparking plug. One gets, therefore, the somewhat novel, if not entirely novel, arrangement of water-cooled sparking plugs, a point, inci-

dentially, which, on the assumption that the complication necessitated is not excessive, is quite likely to be a sound proposition. The disc previously referred to is bolted into position in quite a similar manner to the everyday type of construction, where the heads are loose, though no washer or packing gasket is used, the faces being machined and ground true, as was the general practice in the very earliest days of the motor car industry. When the four separate cylinder heads have been securely attached, a single casting is then placed in position and fastened by means of screw caps, which fit the sparking plug projection, the said casting serving as an overall cover to the whole four cylinders. It will be gathered, therefore, that this cover constitutes the upper portion of the water-jacketing system, and therefore the head of each cylinder, although entirely removable when so desired, is, nevertheless, thoroughly cooled. Externally, the design is very neat, and another point in favor of the sparking arrangement, as referred to, is that the plugs themselves are protected from accidental injury, and, owing to the more even temperature, less liable to cracked porcelains.

Instead of a complete sleeve surrounding the piston, or two sleeves similarly constructed, but working the one within the other, this new Fischer motor has two crescent-shaped sleeves which are entirely independent of each other. Neither do they go the whole way round the piston, but only through some 90 to 100 degrees of the complete circle of the piston. Consequently, there is a considerable gap each side between them, and the designer has had the courage of his convictions and tapered off the sleeves to so fine a point that it is claimed the piston works on one fraction of an inch on the sleeve and on the next small fraction on the cylinder walls, and yet maintains a working fit throughout the whole of its circumference. Now here at once there is room enough for unbounding criticism. Of course, the question of leakage of gas is immediately to the fore, and just how a piston ring can bridge from the inside of the sleeve to the cylinder wall without permitting an escape of gas is a point which brings one from the bare possibilities of theory to the substantial improbabilities of practice. However, against that there is the fact that the engine is built and running, and so far as we learn up to the present, giving good results.

Then again, in order to get anything approximating to a gas-tight fit at this point, it would be essential to bring the crescent-shaped sleeve to such a fine taper that one would anticipate that the fine edge would get excessively hot, and thus cause trouble; while with regard to the question of lubrication, the design would certainly not seem to aid in this respect. The two valves are mounted opposite each other, so that the piston thrusts on to them on the firing and compression strokes, and the valves are of a perfect crescent shape, and the pockets in the cylinder walls which hold them are made by regrinding the cylinders to take the sleeves. It will readily be seen that for the engine to be successful in operation it is essential that the workmanship and materials employed must be of the very highest order. Then again, the method of imparting the motion to the sleeves through the intermediary of a cam path is one which opens out a fresh field for comment. The cam shafts themselves—there are, of course, two, one each side of the engine—are operated through the medium of an ordinary type of gearing, the final motion being conveyed through a small bell crank lever, and it is claimed for the combination that very accurate timing can be obtained, and that the motion of the sleeve is not only quick where intended so to be, but is also quite positive in action. The lubrication is effected through the medium of a combination of the splash and forced-feed systems.

### CHANGES NAME

The Brookshire & Robinson Co., at St. Paris, O., has changed its name to The Wal-Rike Pony Vehicle Co.

### NEW FRENCH FRICTION DRIVE CAR

A description of the Arista car is rendered simple by reason of the inherent simplicity of the car itself. It is a model recently placed on the French market, in which the designer has reduced the number of parts to a minimum compatible with satisfactory service, and, in consequence of this simplification, has produced a car low in first cost and cheap in upkeep.

The design is the same throughout, the only difference being in chassis dimensions. The Chapuis and Dornier motor has been in use on a large number of English and French cars for the last half-dozen years. The cylinders are a single casting, the valves are superimposed, but having their operating mechanism entirely enclosed; cooling is by thermo-syphon, and oiling by a pump circulating system, with direct feed to the two main bearings, and troughs for each of the connecting rod ends. The engine accessories comprise a Bosch magneto and the Zenith carburetor.

An interesting detail fitment is the provision made at the base of the radiator for the carrying of the registration number. The panel at the base of the radiator is of sufficient size for the numbers to be painted on it. To left and right of the plate are a couple of recesses for receiving small electric lamps. These are intended by the designer as emergency side lamps. They satisfy the French police requirements on lamps.

Final drive is by friction discs, but the details of this are worked out in rather an original manner. An independent sub-frame, attached to the main frame and to the rear axle, has mounted on it the transverse shaft carrying the fiber-faced friction wheel. This shaft is mounted in ball bearings, and, unlike many friction-driven cars, has no swinging movement to release its wheel from contact with the driving wheel. A brake drum is mounted on the transverse shaft, and also a pinion allowing the drive to be taken from the counter shaft to one of the road wheels by means of a silent chain. The drive is taken to the right-hand rear wheel only, the left-hand wheel running free.

The connection between the motor and the final driving mechanism is made by a long propeller shaft, carried at the rear in a very large ball bearing mounted in the sub-frame, and having the ribbed friction plate attached to it. The diameter of each friction plate is practically 20 inches, which gives a circumference of, roughly, 58 inches. According to the usual method, the driven friction wheel has a transverse movement on the countershaft, this movement being obtained by the operation of a side lever working through a connecting rod and a fork. Obviously, it is possible to obtain as many gear ratios as desired, according to the number of stops placed on the sector. To disconnect, either for facility in "gear" changing or to stop the car, the movement is the same as on any ordinary car fitted with a clutch. The depression of the pedal, however, moves the driving disc forward on its squared shaft by compressing the coil spring maintaining it in contact with the driven disc.

A screen under the motor and a pan under the friction discs and the chain give all necessary protection to the working parts. The general lines of the car are pleasing.

### LARGE WAGON SHIPMENT

The Nissen wagon interests of Winston-Salem, N. C., who have been connected with the manufacture of wagons since 1787, have made the largest shipment of wagons ever sent out from that city, and possibly the largest ever made from any city in the south.

The shipment consisted of 314 wagons, representing a value of nearly \$15,000, and which, if connected would make almost an entire mile of wagons.

This industry, which has steadily grown since the first wagon was built in 1787, has probably done as much to advertise Winston-Salem as any other one concern.



## SUBSTANCE OF COLORS

The most important color is white lead; this is a carbonate of lead, and can be had either as dry white lead or tub lead, this is dry white lead ground in oil to the consistency of a soft paste. Lead color is tub lead mixed with a little black and sufficient linseed oil and turpentine. Tub lead mixed with Indian red is "flesh color," and is used instead of lead color for the coats that follow the filling up on a job that is to be painted with vermilion or other red color. Tub lead is also used mixed with yellow ochre or with filling up powder to make filling up. It is also mixed with other colors to produce the shade required, and for white picking out and fine lining. It is often adulterated with sulphate of barytes.

White lead, if pure, covers better than any other white paint, and quite as well, if not better, than any other color. Dry white lead mixed with gold size makes hard stopper. This should be kept under water, as otherwise it soon becomes too hard to use. It is much used for filling up pin holes, etc.

Several substitutes are used for white lead; there is the white sulphate of lead, but it does not cover as well.

Heavy white or sulphate of barytes has but little body, and is only used to adulterate white lead.

Zinc white is a good color, but does not cover as well as white lead, but is useful for mixing with other colors.

Whiting is finely ground chalk or carbonate of lime, and has very little body. Mixed with linseed oil or boiled oil, it makes putty, and is used instead of stopper on the wheels. A mixture of whiting and glue is sometimes used by body makers to cover defects in the timber. Black is always some form of carbon. Lamp black is the soot formed by burning any cheap resin or oil with an insufficient supply of air. It covers well, but does not always dry well, because it contains some portion of non-drying oil, either carried over by the flame or formed during the imperfect combustion of the oil. Bone black is made by heating bones to a red heat in a retort. Ivory black is made from ivory in the same way. These two black pigments are often ground in water to a thick paste, and then dropped on to a slab in the form of little irregular pyramids to dry, and are then called drop black. Vegetable black is now very much used in place of lamp black; it might be called finely powdered charcoal.

Lamp black is liable to catch fire spontaneously, and therefore should be mixed with oil or turpentine and put up in cans with a layer of water over the top. But drop black will not catch fire spontaneously, and therefore can be kept dry.

Prussian blue (the prussiate of iron) is a dark blue, very useful to mix with various yellow colors to form green, and mixed with white is used as a ground color for ultramarine.

Ultramarine blue is an artificial substance made as nearly as can be of the same composition as lapis-lazuli, a rare mineral which, when powdered, formed the artist's color ultramarine. It does not cover very well, therefore if wanted to look dark it is painted over black, and if wanted to look a lighter color it is painted over a mixture of Prussian blue and white. If ultramarine is mixed with white it does not form a clear light blue, but a milky looking color.

Cobalt is a light blue, but has very little body, and is an expensive color; it is alumina colored by the oxide of cobalt, or sometimes a kind of glass colored blue by oxide of cobalt has been used.

Indian red is red oxide of iron, and is made by heating sulphate of iron until the sulphuric acid is driven off, or by heating the natural red ores; it varies in color, being either a light or a dark red. That made from sulphate of iron is the darkest and richest in color. Indian red has good body, and is used to mix with other colors, and when mixed with black japan makes a good maroon or claret color.

Red oxide of lead covers very well; it is a little used to mix with other colors, and is mixed with white lead as a ground color for vermilion, or it is used pure for this purpose sometimes.

Vermillion (sulphurate of mercury) is to be had light or dark; it is permanent and covers well. It is very much used for picking out and fine lining, and often for the underworks of carriages. It is a heavy color, and is often mixed with scarlet lake or crimson lake for picking out to make it flow from the pencil more easily.

Carminette and several other pigments are about the same color as vermilion; they are generally made from red lead, and some of the aniline colors; some of them are as good as vermilion, and some not so good, as they fade when exposed to the sun.

Chrome yellow is the chromate of lead, and orange chrome the bi-chromate of lead; as they can be mixed in any proportions there are any number of intermediate shades. They cover well, and are used for picking out and for mixing.

Permanent yellow is the oxychloride of lead, and is a very good color, but has not quite so much body as chrome yellow. It is very hard, and therefore difficult to grind.

Naples yellow contains lead and antimony, and is sometimes used for finishing coats or for mixing. This color is spoiled if iron comes in contact with it, so in mixing it care must be taken not to use a steel pallet knife.

Yellow ochre is a kind of yellow clay. That found near Oxford, England, and called Oxford ochre was at one time considered to be the best. Ochre is used as an undercoating for better and more expensive yellow colors, and at one time was generally used mixed with white lead to make filling, before the modern filler was introduced.

Green colors are often made by mixing blue and yellow. Prussian blue and chrome, or Dutch pink or yellow ochre all make green, and a very useful green is made by mixing Dutch pink with black japan. It is semi-transparent, and must be painted on solid green ground color; it wears well, and has a very rich appearance.

Brunswick green contains oxychloride of copper, and this is a very favorite pigment. There are a large number of green colors sold by color manufacturers, such as quaker green, Brewster green, etc.

Emerald green, verdigris, Sheelie's green, all contain copper and are very poisonous and seldom used except for fine lining or for glazing.

Brown colors are generally obtained by mixing black and red. Indian red and black japan make a very good maroon color, commonly called claret, which looks well when fine lined with vermilion and varnished, but its appearance is often rendered richer by glazing it with a suitable lake.

Umber, a brown ochre or clay, and burnt umber, the same substance heated red hot, are both used as fine colors and for mixing, and have good body. Vandyke brown, a kind of bog earth, has not so much body, and is but little used.

Raw sienna, a yellowish brown earth, which, when burnt, turns to a reddish brown, is another member of the same family as ochre, umber and Indian red, all of which cover well and are non-poisonous.

### CATALOGUE No. 3

Campbell & Dann Mfg. Co., Tullahoma, Tenn., has issued an export price list and catalogue of carriage and wagon wood stock. It is clearly comprehensive and useful to any buyer of these goods.

## IRON OXIDES IN PAINT

Prof. G. W. Thompson, chemist of the National Lead Co., in an address, said:

"It must be generally admitted that all white paints decay more rapidly than colored paints, especially those colored paints which are characterized as warm in tone."

In view of this well-established fact, it is rather remarkable that popular taste, during recent years, has run strongly towards the less durable colors.

The oxides of iron, whether natural or artificial, when properly prepared, are all decidedly warm in tone and all produce highly durable paints. The range of tone and color is very wide and the effect pleasing. They hold their color remarkably well, are the most economical and have none of the defects common to very light tints, such as chalking, cracking, peeling, scaling, etc.

If instead of producing light tints by adding a small percentage of color to a large quantity of white paint, the proportion of the iron oxide were increased, paint consumers would be immeasurably benefited.

The abundance and cheapness of ochres has always made them attractive for popular use, and the silica base ochres have long enjoyed popularity as a cheap priming coat. As tinting colors to impart a yellow tone to other pigments they are unsurpassed, generally increasing the durability of the paint.

The hematite colors, both natural and artificial, are among the most highly satisfactory pigments known. Their color is uniformly bright and pleasing, and the tints produced by them are warm and rich. Their color is practically unalterable under any conditions. They are highly decorative, durably protective and gratifyingly economical.

Of their general excellence Hurst says:

"As a pigment, red oxides are perfectly permanent under all conditions and are among the most permanent colors a painter can use. They mix perfectly with all pigments without either affecting them in any way, or being affected by them."

F. Maire says: "Venetian reds made upon a gypsum base are reliable and practically unchangeable by exposure to light and air. Venetian red, either the natural or the artificial, may be mixed with other pigments with perfect safety. . . . It is one of the few colors that cannot be spared and could be replaced by no other red pigment."

Of Indian red: "It is most permanent; neither light nor impure air, mixing it with other pigments, time nor fire, seem to cause change in any way."

Parry and Coste say of the iron oxide pigments: "A most important class of colors, on account of their extensive use . . . and of their high intrinsic value."

Terry says: "The whole group of oxide reds is of foremost importance, by reason of their good color, covering power and durability, besides which . . . their cost is reasonable."

Bersch says: "The pigments composed of ferric oxide are used in enormous quantity. They are distinguished by great permanence."

Toch says: "Among the red pigments in the paint industry, the oxides of iron take the lead as by far the most useful." He states that on an iron roof "a mixture of graphite and ferric oxide . . . outlasted graphite by two years and red lead by three years."

Sabin says: "No colors are more permanent than some of these pure oxides. They have lasted for thousands of years and there is no reason why they should ever change."

Zerr and Rubencamp say: "A coating of red oxide paint is a perfect protection against rust, a property upon which is based the extensive use of this pigment for painting ironwork."

## NOVELTY TUFTING CATALOGUE

The Novelty Tufting Machine Company, of Detroit, fully explains and clearly illustrates the work of its remarkable tufting machine in a recent catalogue. Trimming made easy is the way to put it.

## SUGGESTIONS FOR PAINT SHOPS

Now is the time of year for small carriage shops, also blacksmith shops that have paint shops in connection, to fix up these shops to make paint shops bigger. If you have not room then fix up what shop room you have, put in plenty of light, fix floors and doors of finishing room. Anyhow, get ready for the automobile trade repainting and other repairs, for you know when the owner or the other man starts to fix them it's fix all the time from then on as long as the auto lasts. The engine repairs cost so much it is hard to get them to have them repainted, but there are a good many that do have them repainted and keep them looking nice, so here is a good way to repaint one cheap:

An automobile painted in a small shop at what the owner thinks he can pay, say from \$25 to \$40. This way will do for both prices. You can call it a revarnish or a repaint one, either, for you will have to do this way to most all; revarnish, anyhow. It is worth \$10 any time to clean grease off an automobile; after you get the grease cleaned off chassis and body you are going to paint, rub the body down good with pumice stone and then clean up good, touch up all bare spots with quick drying lead; if any holes, putty them, when dry, sandpaper putty spots and moss lead spots. Then touch up all spots and old stripes on body; then after color is dry give body a coat of solid covering varnish. Then, when dry, if smooth, moss or rub lightly; clean up good, touch up and stripe. You can get most any color and shade you wish in the solid covering color varnish, and you can get the dead color they are mixed with from the people or firms you buy from. For gear or chassis they will need sandpaper, for, as a rule, they are painted quick in the shops they are made in, and not much paint on them; paint all worn off. Touch up bare spots if you wish, according to price. If you lead bare spots, when dry just moss lead off, then color all lead spots. When dry give a coat of solid covering color varnish, then dry moss and stripe and finish. Use any good body and gear varnish that is heavy bodied and dries quickly.

For this quick work it is best to keep two kinds of varnish, slow and quick drying, so you can repaint according to the price you get for repainting.

Now, this is the only way you can do as prices are, and do not keep them in the paint shop all summer; that's what pleases the owner better than anything else. It is hard to get owners to have their cars painted in the winter; they never take the notion till spring; see other cars all brightened up; then they sit up and take notice, and bring theirs to the paint shop and want them done at once. Do it for them.

Automobiles should be made so they could be unhung easier. Painting them all together is some job, and mean to get at.

Paint shops must keep up with the times. Old time methods will not do unless you get the price. The only time to use the old way of repainting is when you burn off a job. Read, watch and learn.

W. A. RIGGLEMAN.

## VARNISH FOR REFLECTING SURFACES

Metal mirrors, especially those of silver, used as reflectors for searchlights, oxidize very rapidly and must be frequently polished with great care. At each repolishing, however, the reflecting power is lowered, and the operation must be repeated at shorter and shorter intervals. To remedy this, an inventor has evolved a peculiar varnish, which adhering to the metal reflectors as a hard, infinitely thin, invisible film, preserves the polish and reflecting power almost indefinitely. The inventor claims the varnish to be absolutely harmless, non-deteriorating and so impervious to water that the surface to which it has been applied can be washed with plain water and dried with chamois without fear of subsequent oxidation. This varnish is applied in the same manner as ordinary varnish, simply taking care that no air bubbles are allowed to form.—Paint, Oil and Drug Review, Chicago, Ill.

## HISTORY OF VEHICLE WHEELS

There is a humanitarian as well as a scientific interest in this study of wheels. Throughout the ages the use of wheels has played a crucial and ever-active part in the development of the means of inter-communication, now become so rapid and frequent as to form the ineradicable and predominating feature of our time.

The actual origin and invention of the wheel are lost in the mists of antiquity. The use of it appears to have originated in the east and spread westward. Doubtless the nomadic tribes would be among the first to discover the advantages of wheels. This may account for their widespread use at a very early date. The oldest Indian literature mentions wheels, showing their use as parts of vehicles as far back as 1700 B. C. This is about the date of the first reference to wheels in Holy Writ.

Those who seem most competent to judge agree that the wheel took its origin from the cylindrical tree trunks which were placed as rollers under a load. Probably the first vehicle was the sledge, the rollers being used when heavy masses had to be drawn. Rollers being in demand, and heavy ones being difficult to handle, it is likely that long ones were cut up to make small ones. The desirability of fixing these would soon become felt. Precisely how this was done we do not know, but conjecture suggests that the middle may have been grooved out to permit of a staple or pegs on the sledge engaging with the groove and preventing it running along or sideways. This groove may have come to extend the whole width of the sledge. A natural sequence would be to build this form up out of three parts—two disc-wheels and one axle, the axle being prevented by pegs from rolling away underneath the cart. Solid wheels were used by the less civilized nations of Asia Minor, and on the farm carts of classic times. Virgil refers to solid wheels built up of three planks held together by an iron hoop, and this form is said to be still in use in southern Italy and to make a loud creaking noise as it turns. Some of the old Chinese pictures show solid wheels with holes cut out, possibly for lightness, but more probably to admit a pole for skidding the wheel on a decline. This is an ancient method of braking, from which has arisen the phrase, "to put one's spoke into another man's wheel."

As late as thirty years ago bullock carts were in use in Lisbon with only two such pegs to keep the axle in position. The body of the cart could be lifted right off the wheels, and even now solid wheels and axle are hewn in one piece out of tree trunks and used for carts in the northern provinces of India. Solid wheels with iron axles are also used.

Splitting must have been a serious cause of trouble in ancient disc wheels. Some that are still extant, dating from 1550 B. C., show bad splits and leathern thongs binding the parts together. Segments of tree trunks would necessarily have a limited diameter, and though the large ones would prove better runners on rough roads, they would be more likely to split. This may have led to planks being nailed together, some crosswise, and the survival of the fittest would account for their persistence. From this to radial planks cut parallel to the grain is not a long step, and from radial planks to spokes is a natural sequence.

In India the wheel entered largely into the native rites of worship. Some of the religious writings contain an account of a mystic wheel, with a nave and tyre and 1,000 spokes. The connection between the wheel and religion has been investigated by W. Simpson. The wheel was symbolic of the apparent rotation of the sun and stars, the worship of which led to the use of praying wheels, circumambulation, processions, and other "circular" rites.

We pass on to the next stage in wheel development, which dates from the use of bicycles. During this gap of about 2,500

years the only changes of any importance were the dishing of wheels to resist lateral stresses due to ruts and rounding corners, and arranging the spokes on two cones instead of one. This last was done as early as 1828, and is still used at Woolwich Arsenal in building ambulance wagon wheels. Strange though it may appear, wheels were not used generally for facilitating transit in Britain till comparatively recent times. The very first carriage was made for Queen Elizabeth in 1568; the first that plied for hire in London were in 1625; and the first stage coaches were in 1659.

Broadly speaking, all the early wheels were compression wheels with radial spokes. The introduction of the suspension wheel for bicycles marked a great advance in the shock-absorbing powers of wheels. The first bicycle wheels were compression wheels and had wooden spokes and rim with an iron tire. The wheels were just ordinary light carriage wheels. The curved member connecting the back axle to the top of the front wheel is not altogether unlike that used in the old chariots. Later bicycle wheels had radial wire spokes which, being in tension, kept the rim in position.

In the older wheels the rim was normally in tension, and the spokes and hub in compression. In a suspension wheel the spokes and hub are in tension, while the rim is in compression. It is a very common, though not unnatural error to suppose that the spokes of a modern bicycle wheel are sometimes in compression. As a matter of fact, they are always in tension, even those between the hub and the ground, when a heavy rider is in the saddle.

If we take one element of a wire wheel and if tension be applied to the spokes, the rim and hub would move toward one another were it not for the effect of the other segments: the resistance to the compression forces in the rim and to the bursting stress in the hub shell prevents this movement. When compression is applied between the bottom of the rim and the hub center of such a wheel, the tension of each spoke will, if the rim is inflexible, decrease proportionately to the cosine of the angle between the spoke, or, rather, the projection of the spoke in the plane of the wheel, and the direction of compression. When the cosine becomes negative, as when the spoke is above its horizontal position, the decrease becomes, of course, an increase, having its maximum for spokes on the upper part of the wheel pointing in the direction of the compression. Obviously the spoke tension should never fall to zero nor rise above the elastic limit, and these limits help to regulate the choice of the initial spoke tension.

The tangent spoke wheel, in which the spokes are tangent to a circle having its center at the axle and are not normal to the rim, probably owes its origin to the curved arms used in driving pulleys and fly wheels for transmitting considerable torque. Both ancient and modern radial spoke wheels are capable of transmitting a certain amount of torque, but the amount is limited, and depends not only on the bending strength of the spoke, but on the rigidity of its attachment to both rim and hub. Since no material has an infinite elasticity, it follows that, however thick the spokes may be, there must be a certain amount of twist of the hub (in the plane of the wheel) relatively to the rim, or no drive can be transmitted. When the torque is considerable—as in a motor car wheel—the actual twist sooner or later arises above that corresponding to the elastic limit at some or all of the spoke attachments, and this leads to gradual loss of rigidity and to creaking, and, in some cases, even to charring owing to rubbing. In a radial spoke bicycle wheel subjected to a torque in its plant, the hub must rotate relatively to the rim until the spokes are tangent to a small circle.

In a tangent spoke wheel the hub must also turn relatively

to the rim, but the angular movement is far less. In this case torque has the effect of increasing the tension on half the spokes and decreasing it on the other half. This greater rigidity in torque transmission places the tangent spoke suspension wheel far ahead of both radial compression and radial tension wheels. It has long been universally used for bicycles and motor bicycles, and is now enjoying unrivalled popularity in its application to motor cars.

The radial wheel has to be subjected to greater radial tension or compression in order to impart the necessary torque rigidity. In the tangent wheel the necessary torque rigidity can be attained without imparting excessive radial rigidity. As a result of this the tangent suspension wheel can be made capable of absorbing shock.

### WHEELS

Primitive man had no wheels. The Indian pony, dragging two poles, one end of each fastened to his neck on either side, with the papoose riding on a platform on the poles in the rear of the pony, is an instance of primitive transportation.

The old Greek conceived the idea of a rolling support for the rear end of the poles; this led to the chariot.

In the pioneer days of our own country our fathers were wont to cut a short piece off the end of a log, and make a hole through the center of it for the axle. This they held in place with a "linch pin." To keep it from wear they lubricated it from the "tar bucket."

Later, to prevent wear they bound the wheel about with an iron band—the "tie-er" (tire).

Later still they enlarged the wheel with rude spokes and felloes. This enabled them to reduce the size of the center piece or hub.

With this construction the "tie-er" is much more than a mere protection from wear. It is the bond that keeps all the parts of the wheel in place. And an uncertain bond it is. Owing to their physical properties the wood and iron act in exactly opposite ways under changing conditions of the weather. When the weather is dry and hot, the iron expands and the wood contracts. This allows the joints to loosen and the sand to enter, with the result that the wheel is soon destroyed unless we frequently "set the tire." If the tire is made tight while the weather is hot and dry, when the wet, cold days come the iron contracts and the wood expands, and there is an inevitable crushing of the fiber of the wood. This is repeated with the changing seasons until the wheel is destroyed.

Six million wheels per annum are required to supply the demands of wheel users of the United States. No wonder that the timber supply is said to be all but exhausted.

### NEW STEEL WHEEL AND DETACHABLE RIM

The Kronprinz is a departure from conventional practice. Being entirely of metal it has lightness, strength and stability under varying atmospheric conditions. The principal of detachment consists in having a steel bolt mounted in the end of each tubular spoke. The series of bolts engage recesses in the under side of the tire rim, which is of thicker section than the usual standard rim. To force the bolts into position a quarter turn of a spanner given to each one is all that is necessary. The bolts automatically lock themselves into position, but a further safeguard is provided by a clip, which, when tightened, grips each bolt securely. The method by which the bolts are extended to engage the rim is a simple and effective one. The interior end of the bolt is made in the form of an inclined plane, and when the bolt is turned it is forced against another inclined plane on the adjacent fixed part, and the result is that the bolt moves outward. The mounting of tires on the rim can be effected as with an ordinary wheel, the security bolt arrangement is the same, and for the operation of removing the rim only one spanner is required.

### CHAIN DRIVE OR GEARING?

One of the features of automobile practice has been the adoption of the chain for distribution gearing. Its use was brought about by a number of factors, of which one was the improvement of chain transmission itself, another the ease with which silence can be secured, and thirdly, its suitability to the sleeve-valve engine.

The elevation of silence to the position of an ideal rendered a quiet distribution gear of paramount importance, and it happened that the quietest type of engine was most adapted to a chain distribution gear, and thus began the displacement of the pinion drive. Whether chain or pinion distribution is the best is an aspect of the question which has not received much attention.

As regards cost, there is little to choose between good class gears and a silent chain, for the latter is by no means cheap, and the chain wheels call for almost as much care as the gears they displace. But the chain has the great advantage that silence can be secured with certainty, whereas with gearing there is always a difficulty in making every drive conform to the same standard of silence. Time has to be spent in the running-in and scraping, and distributing pinions have often to be thrown aside before a really quiet drive is obtained. Therefore, while there is not much difference in actual cost between each type of drive, the gear system entails more care and time in making, and a higher percentage of scrapped parts, so that the manufacturer does, on the whole, stand to reduce works costs to some degree by using the chain.

When we come to the more expensive types of vehicle, where cost of production is not absolutely the first consideration, there is not the same incentive to the use of the chain, for, given the necessary attention, the gear drive can be made quite as silent as the chain.

With time and trouble the gear drive can be made equally silent with the chain; and some firms have been able to obtain this silence on quite low-priced chassis without recourse to the chain. One example of what can be done in this direction on a cheap chassis is the little German-built Brenna, which has about the quietest engine of any car listed at under \$1,250.

On the whole we may take it that silence is more easily secured by the chain, but to the user the questions of freedom from wear and breakage, comparative attention required, and frequency of renewal are of at least equal importance to mere noiselessness of running, especially in the case of smaller types, whose owners drive and attend to adjustments personally.

The mere use of a chain drive is not necessarily a proof of up-to-date design, for its successful employment has called for many experiments and close co-operation between engine and chain makers. It was found by no means easy to standardize wheels and chains so that when brought together perfect meshing could be invariably obtained. Such initial difficulties as these have, however, now been overcome.

Gear drives, when properly designed and cut from suitable material, wear but little, and the only effect of long use is to render them a little noisier as back lash develops. Actual tooth breakage from wear is practically unknown, but with chain distribution, on the other hand, wear is more apparent; and unless provided for will sooner or later give trouble.

It was for the operation of sleeve valves that the chain was first used to any extent, and here conditions are the most favorable, as the eccentric shaft imposes a practically steady load, whereas the cam shaft of a poppet-valved engine offers a varying resistance, which can easily set up whipping in a chain of other than the correct length. Such whipping produces a far greater strain on the chain than the normal load, hence slackness, which means rapid wear and probable breakage. Such slackness also upsets the exact timing of the valve and ignition system, hence the provision of some form of adjustment will strike one as a fundamental requirement of this system of valve operation. Some designers, however, placing

simplicity before everything, prefer a non-adjustable drive, but such an arrangement is not to the interests of the user.

Where roller chains are used adjustment is absolutely essential; but some consider that the more generally used inverted tooth type of chain gives sufficient adjustment on a simple cam shaft drive by its tendency to mount the teeth, but here again the use of new pitch circles must mean some slight alteration of the timing.

Another minor factor in connection with chain drive is that whether adjustment is provided or not there will be a slight alteration of the timing as the chain stretches. As regards the cam shaft, this interference with the timing is least if the drive is straight from the crank shaft to the cam shaft sprocket, but even so, several firms provide an angular adjustment for the latter in addition to the more usual variable magneto setting.

Apart from breakage, adjustment enables one to get at least double the life that is possible with a fixed center drive. Once a certain lag is developed the chain must be changed or adjusted, while if it is adjusted fairly often wear will be still more reduced, the wear increasing very rapidly with the lag.

And now for a final advantage of chain drive. The efficiency of chain transmission, especially when the chain is enclosed and running in oil, is far higher than that of gearing, and that efficiency does not depend so much upon accuracy as in the case of spur wheels. The latter must be cut and finished to the highest degree of accuracy if quiet and efficient running is to be obtained, but with the chain a little backlash makes no appreciable difference. Yet another point in its favor is that drive by chain is "silky" and smoother than by gears, and hence the entire valve system is relieved of shock, and should have a proportionately longer life. The power absorbed in the driving of the half-time gearing may be comparatively small, but it is in these small economies that engine efficiency can be enhanced, and so taking everything into consideration chain drive does offer some advantages, but advantages which may be bought too dearly.

First and foremost, it may be laid down that chain adjustment is necessary to the best results, and this—except where roller chains are used—points to the triangular drive as being the best practice, as lending itself to adjustment by magneto movement.

Here again, a point worth noticing is that some eccentric bush designs do not allow for magneto movement, the latter being driven through a universal coupling, which is not to be recommended. True, the shifting of the magneto, and perhaps a pump on the same shaft-line also complicates matters, but after all the chain adjustment is not one for the roadside, and can be left quite well till a general overhaul is made.

### THE CYCLE CAR

This is a new English periodical that is developing the use of a light automobile, a sort of miniature type to meet the needs of those who want the sport and convenience combined with low first cost. It is the English answer to the "cheap car."

The publication is well and interestingly handled, and the illustrations point the moral as well as adorn its tale.

It is published by Temple Press, Limited, proprietors also of *The Motor*, at 7-15 Rosebery avenue, London, E. C. Its price is a penny (two cents) a copy.

### POINTS ABOUT MEYER THREADS

The Meyer sewing threads and silks, made by John C. Meyer & Co., in Lowell, Mass., have the reputation of being longest and strongest used for carriage and automobile work, having stood all tests. Freedom from knots, and non-fading quality are great points in their favor. Those who desire to try out these well-liked goods will be given samples on spools, tubes and ready-wound bobbins that fit all usual makes of sewing machines.

### COLUMBUS BUGGY COMPANY IN RECEIVER'S HANDS

By appointment of Federal Judge John E. Sater, January 18, Daniel McLaren, a retired business man of Cincinnati, assumes the receivership of the Columbus (O.) Buggy Company, manufacturers of carriages and automobiles, among the latter being the Firestone-Columbus car. The appointment was upon the petition of Valentine & Co., of New York, which sets out an unpaid bill of \$3,436.61.

It is alleged that the company owes 280 firms in various parts of the country, that its credit is impaired and continuation of the business is threatened. The purpose of the receivership is declared to be to protect the firm's business. It is alleged that the assets are about \$1,000,000 and the liabilities about \$600,000. It is averred that the company has \$1,250,000 worth of product in course of construction, but that it is unable to complete them because of impaired credit.

There is said to be in prospect a complete reorganization of the company. It now has a capital stock of \$2,000,000, of which \$700,000 is common and the rest preferred. C. D. Firestone is president.

According to a local paper, "the gasoline automobile business of the company has been a losing proposition from the start. It is expected that the manufacture of this class of machines will not be continued in the future. In the horse-drawn vehicle field the company has done very well and its electric has been a winner. In fact, it is said, that the latter has been the mainstay of the business. At present the company has a large volume of electric contracts booked which will assure it continued operation at a good percentage of capacity. Despite the fact that the receivership was not contemplated in the original plans, it is a friendly one and is expected to settle the affairs of the company with dispatch. Daniel McLaren, the receiver, has done big things in the business world and has taken hold of his present task with an energy, ability and determination that assures a satisfactory conclusion. The business of the company will go forward without interruption and it is expected that pay rolls will be met promptly."

The Central Trust Company, of Chicago, has been appointed receiver in charge of the Columbus Buggy Company's property in Chicago. The appointment was made by Judge Landis of the Federal court.

### LAPORTE CARRIAGE CO. SOLVENT

The Laporte Carriage Company was declared solvent by Harry Sheridan, referee in bankruptcy, on January 9. The decision closes the receivership and enables the plant to resume operation under its own management.

J. J. Parkhurst, president of the Laporte Carriage Co., was the only witness to be sworn. He testified as to the solvency of the company, the assets being \$308,700 and the liabilities reaching \$126,100.

The petitioning creditor, the Lackawanna Leather Co., of Hagerstown, N. J., moved to dismiss its petition. This means, says a local paper, that the Lackawanna Leather Co. is liable for all costs of the receivership proceedings, and is also liable. It is said, for heavy damages to the Laporte Company, on grounds of loss of business and injured reputation.

The Cudahy Co. attached a shipment of buggies of the Laporte Co. at Kansas City and the dismissal of the receivership proceedings makes the attachment good, whereas if the company had been adjudged insolvent the attachment would have been ineffective.

Decision has not yet been reached by the carriage company as to the manner of reaching a settlement with its creditors. A bond issue is understood to be likely. President Parkhurst said that the property of the company on the north side of Washington street was for sale, and this should bring a good price. He also stated that, although he had no prospective purchaser at present that, inasmuch as he was advanced in years, he would consider a proposition for the sale of the plant.



## WESTERN DEALERS' CONVENTION

The twenty-fourth annual convention of the Western Retail Implement and Vehicle Dealers' Association was called to order at the Century Theatre, Kansas City, on January 14, by President C. F. Miller, who delivered an address in which he emphasized intensive farming and improved crop conditions for the farmer and good roads.

Mr. Miller announced that the secretary of the association, H. J. Hodge, of Abilene, had been elected a director of the National Chamber of Commerce.

Mr. Hodge followed Mr. Miller with the secretary's report. He said that through the efforts of the association and the national implement dealers' organization the Interstate Commerce Commission had suspended the freight classifications making implement shipments costly and difficult to handle. The suspension of these rates would greatly aid the small dealer, it was shown.

A resolution was adopted thanking Mr. Hodge and the national organization for their work in having these rates suspended.

Advanced methods of farming, scientific methods of book-keeping and auditing, good roads and the formation of implement clubs all over the country were the points urged upon the delegates by the president and secretary. The national association's offer to help finance and organize implement clubs through the western association's territory was accepted, and the club movement was given a decided impetus by the convention as a whole.

The freight auditing bureau, explained Mr. Marshall, has been in operation in the association since June and has saved the dealers thousands of dollars, they claim, by checking up mistakes in freight bills and other details in connection with the transportation of implements.

A record for attendance and new memberships was created in the convention. One hundred and seven new members were enlisted and 1,000 members and associated dealers and manufacturers attended the sessions at the Century theatre and the business meeting at the Coates House.

Two important conferences held at the Coates House featured the closing day of the successful conclave. The boards of directors of both the Western Association and of the National Federation of Implement and Vehicle Dealers met and laid plans for next year's work, and drafted resolutions covering the main points at issue between the associations and the harvesting machine manufacturers. H. J. Dodge, of Abilene, Kas., reelected for the twenty-fifth time secretary of the Western body, also has been made secretary of the national federation.

Other officers elected by the convention were: President, H. D. Skinner, Braymer, Mo.; vice-president, W. M. Vickery, Blackwell, Okla. Directors: E. C. Waldo, Ellis, Kas.; Thomas Witten, Trenton, Mo.; W. A. Carrington, Wellington, Kas.

## INTERESTING NEWS FROM FRANCE

The past ten years have witnessed in Paris an extraordinary progressive application of motor-driven vehicles to municipal and suburban passenger traffic, as well as to freight transportation, street cleaning, goods delivery, and various other requirements in the daily life of a great city, says Consul General Frank H. Mason. Autobuses, taxicabs, motor vans, drays, and delivery wagons of many types now crowd the streets and are rapidly superseding the old horse-drawn omnibuses and fiacre. Here and there a French family, with respect for the traditions of other days, still maintains its landau, coupe, or victoria, but the few of these that remain are jostled and overshadowed by the steadily increasing throng of automobiles, privately owned or hired from firms or companies which have converted the luxurious stables of other days into vast garages and now monopolize the hired-carriage business of the city.

There were 98,000 horses in service within the walls of Paris

at the close of 1900. In 1909 they had diminished in number to 78,000, and are still decreasing at the rate of about 2,000 per year.

The omnibus and tramway service of Paris is in the hands of a corporation organized in 1854 as an omnibus company exclusively, but which has since absorbed horse, steam, compressed air and electric tramway lines until it controls substantially all the machinery of public passenger traffic within the city except the Metropolitan subway, which was built by the municipality.

The autobus had been on trial since 1906 and had proved fairly satisfactory, but the earlier type had shown serious defects. It was of two stories, or decks, the upper one, or "imperial," being approached from the rear platform by a narrow winding stairway, inconvenient and often unsafe for women and children. The height of the body required it to be hung on stiff, rigid springs in order to give the vehicle sufficient stability when loaded. This caused an undue vibration, and, with various defects in the motor and gearing, rendered the autobus noisy and disagreeable. It had the merits of speed, cleanliness, and manageability, it traversed mainly streets which are not served directly by tramways or the subway, and it pointed the way to the new era of public omnibus service in Paris.

During the automobile salon of December, 1906, there was opened a competitive and practical test of motor autobuses. Nine competitors entered the contest and gave the Parisian public its first taste of the possibilities of the autobus. The speed attained ranged from 8.7 miles per hour during the forenoon, to 5.6 miles during the afternoon, when the streets are thronged and often blocked by traffic.

The result of the competition was in favor of two models, the Brille and the De Dion-Bouton. It was decided to suppress the upper story of the autobus, lengthen the body, and add a spacious rear platform so as to give places for 32 to 35 passengers.

The Brille-Schneider autobus, one of the types adopted, has a four-cylinder gasoline motor of 40 horsepower, cardan drive, with three speeds, which at 900 revolutions per minute give a pace of about 17.5, 12, and 4 miles per hour, respectively.

The new autobus of the De Dion-Bouton model is similar in size and general appearance to the Brille-Schneider vehicle, except that the tires are all of rubber and the rear platform is hung slightly below the level of the chassis.

Another novelty is the three-wheeled electric delivery voiturette, which has been adopted by large retail establishments that have many deliveries of small packages to be made daily in the city and suburbs. The special type most in use is known as the Beff model, and is a Swedish invention. The battery is carried under the seat of the driver and consists of 20 elements of 2.2 volts with a capacity of 150 to 160 amperes. A charge of the battery costs, when the current is taken from the public supply, about 60 cents, or half that amount when the consumer has his own generating plant. A charge gives a run of from 36 to 45 miles at a speed of 12 miles an hour.

## E. L. ACKERMAN NOW HEADS JOS. N. SMITH CO.

At the annual meeting of the Jos. N. Smith Co., Detroit, makers of automobile hardware, held in January, Mr. E. L. Ackerman was elected president and general manager, Mr. C. E. Chamberlin, former president, having retired. The other officers elected are: James Shand, vice-president and factory manager; C. E. Blaesser, secretary and treasurer.

No change was made in the directorship of the company, the following having been reappointed: E. L. Ackerman, chairman; C. E. Chamberlin, James Shand, C. E. Blaesser, and Wm. Lemmer, Sr.

While the output of this progressive concern during the past year exceeded any previous record, their current contracts indicate that the coming year will show even greater advances.

## AN INTERESTING STUNT

How an old foggy, pessimistic dealer failed and a progressive dealer succeeded in an effort to sell a buggy to a farmer was shown by means of an amateur theatrical performance given as a feature of the convention of the Western Retail Implement and Vehicle Dealers' Association, at Kansas City recently. The backnumber dealer was represented by Ed. Blair and the progressive dealer by H. D. Skinner, who afterward was chosen president of the association.

The curtain rose, disclosing a sample buggy in the establishment of Blair, who was seated at his desk. Blair, who is something of a poet, rose, yawned, and relieved himself of the following, a la Walt Mason:

"Oh, by gum, now what's the use, feller in business sure's a goose. Democratic hard times cumin', factory wheels'll stop a hummin'. Corn'll go to 15 cents, feller in business haint no sense; mail order fellers tryin' their best to get my trade to line their nest. Old John Slasher, over the way, doin' his best to make me gray. Sold Jim Driver a buggy and rake after I told him I would take less than cost to make the sale durn that cuss, he orter fail. Got the best line in this town: fellers don't know in lookin' aroun', drop in there at Slasher's store, Slasher sells them, makes me sore. Taxes high and profits slim, leaves me hangin' on a limb. Hogs'll die yet by the score; railroads charge a little more. Reason for it hardly sound; haint got cars to go around; bet next season 'twill be dry, it won't rain afore July. Oh, by gum, now what's the use, feller in business sure's a goose."

(Enter Mr. Skinner.)

Blair: How do you do, sir?

Skinner: My name is Skinner.

Blair: Where you from?

Skinner: Braymer, Missouri. Being down this way I thought I would come in and see you.

Blair: I reckon you don't have to sell implements for a living down there.

Skinner: Oh, yes I do.

Blair: Well, how did you manage to get away? I have been in business now for 25 years and I don't suppose I have got away three days unless it was for a funeral.

Skinner: I have a good man with me and he knows more about the business than I do, and I can leave it.

Blair: That is a pretty good idea. Sit down, Mr. Skinner.

Skinner: How are you getting along in business?

Blair: Business has been pretty good, but I have been kind of looking for ten or twelve years for hard times and I believe it is coming, and I would not be surprised if it came this very year.

Skinner: Crops all right down here?

Blair: Yes the crops are fair. Things move along pretty well. I'm a little bit afraid of hog cholera. If hog cholera got into this country and the hogs would all die, corn wouldn't be worth 20 cents a bushel.

Skinner: Oh, well, I don't believe that we should worry about such things. How are you getting along with the other fellows down here?

Blair: That is one of the worst things. I have a competitor in that old man Slasher over there. A fellow came in here pricing buggies and I offered him for less than cost and he goes over there and the other fellow sells him. What are you going to do about that? I tell you it is a fierce proposition, and over here at another town there is another fellow that keeps me in the sweat box all the time.

Skinner: Do you ever go over there?

Blair: No; what business have I got to go over there? Here is this man Hodge, of Abilene. Have you ever heard of Hodge?

Skinner: Yes.

Blair: I got forty letters from that fellow. I could never keep him out of my mind. I threw his letters into the waste basket. I know what he is trying to do—he is trying to get all of the dealers in the country to come together. It may be all right down where you are, but it would not work up where I am.

Skinner: We do not have the smoothest sailing in the world, but we don't see any use of getting mad at our neighbor because he sells machinery. We say to our dealers, "Get together and form a local club."

Blair: What good will that do?

Skinner: When we get together we consider one thing and another. We talk about some of our troubles, naturally, and among other things the cost of doing business. I remember one time the whole bunch came down to our town and we went to the hotel and took dinner and arranged with the hotel to have our dinner in a separate room and we sat there after dinner and we talked about what our goods cost us and we figured out how many different things we sold in the course of a year. We found that if we shipped our twine in less than carload lots it would cost a great deal more than if we shipped in carload lots, so we arranged to have one of our club order a full car load of 30,000 pounds and it was distributed among the members of the club at quite a saving in freight. Another thing, what do you think of going down to Kansas City with a competitor like Mr. Slasher and going to the hotel and sleeping in the same bed with him?

Blair: Well, I guess he is a pretty good fellow, all right, but I never talked with him about anything like that.

Skinner: I have done that a dozen times with my different competitors down there and I don't think it ever hurt me.

(Enter Farmer Smith.)

Blair: How do you do; something you want? (In a very dignified manner.)

Smith: I am just looking around for a buggy.

Blair: If you would like to buy a buggy, that sure is a "hum-dinger" here. You live close here?

Smith: I live over here in the flats. What is the price of that buggy?

Blair: Well, sir, the price of that buggy is \$85. Now that buggy is a "cracker jack." I would like to show it to you a little. Just notice how that buggy is made; there is certainly "the lily of the valley." I do not believe there is a better buggy than that made. We have handled that buggy for about three years and it's a "cracker jack" right to the floor, it sure is.

Smith: What kind of wheel is that, Mr. Blair?

Blair: Well, that is just the best wood that can be put into a wheel. The factory is located up there in that timber country where they get good timber, and it is made good and solid at the factory. This is an elegant buggy with good paint on it. It will not break down.

Smith: How wide is that tire?

Blair: Well, that is about an inch wide, as near as I get at it, I don't know exactly. I have not a rule here. It has a fine bed on it, as you will observe. It would not be any use to look around anywhere else if you want to buy a first class buggy.

Smith: What kind of springs are those?

Blair: They are good steel springs and they will never break down in the world. Three people can ride in there.

Smith: There is quite a hole in those springs, Mr. Blair.

Blair: Yes, but that does not make any difference about the spring. I tell you we have sold several of them and I know the springs are all right.

Smith: I see that it has only one reach, and two reaches would be better, Mr. Blair.

Blair: How's that?

Smith: It looks like two of them would be steadier than one.

Blair: Well, this is one, but then it is a good one. It is a "hum-dinger." It is a Smith & Wesson buggy and they make them that way. Some of them have two reaches, but then that is no advantage.

Smith: What is the size of that seat?

Blair: I judge from the top there that is about 30 inches, 30 or 32 inches. If you will notice, it is a very fine seat, a good spring here in the bottom and a good leather cover.

Smith: How high is this back?

Blair: You mean from here up? About 18 inches. Of course, I do not know exactly, it is plenty high all right. You notice there is a good nickel hand hold on the seat and that is a good thing, mighty convenient.

Smith: What is the size of the body on that buggy?

Blair: That is about 22 inches; it is just right for a good average buggy.

Smith: Well, I was just looking around.

Blair: Well, now—

Smith: I think, though, Mr. Blair, I can buy a buggy that looks pretty near as good as that for \$50 or \$60, and Smears-Sawbuck will pay the freight. I know I can.

Blair: Well, I kind of expected to hear something like that. Now I will tell you, this is an A No. 1 buggy, and then you know it is not right to send money away for buggies; it is not the right thing to do. I have been here for years paying taxes and helping people one way and another, and you ought to buy the buggy here anyhow on general principles. I know that buggy is worth more than you think.

Smith: I ain't going to buy no buggy nohow, I was just looking around. How much cash money do you want for that buggy?

Blair: I can't sell it for less than \$85. I can't do it, no use talking about it; it is worth the money, and it is worth more money than any buggy you can buy from any mail order house. I tell you, you should buy the buggy here.

Smith: I'm not going to buy any buggy right away, anyhow. I will see you again, Mr. Blair.

Blair: Now you come back.

Smith: Yes, maybe I will.

(At this juncture Mr. Skinner, who had listened with amusement to the conversation, interrupted.)

Skinner: My name is Skinner. I sell buggies over at Braymer, Missouri. I handle this same make of buggy and I happen to know something about it. With Mr. Blair's permission I will tell you.

Blair: Go right ahead.

Skinner: Now, you asked the size of the wheel. That is a  $\frac{7}{8}$  wheel of the Sarven patent. When I was coming home from the dealer's convention in Chicago one time I stopped off at the factory where these buggies are made. Do you know that they get these hubs from rock elm trees that grow down in New Jersey?

Smith: Rock elm?

Skinner: Yes, sir, and you know you can't split it with an axe. They season that wood for several years before they use it. Then these spokes are made from second growth hickory, well seasoned. They use only the straight grain because each spoke is cut out first as a square, then turned down on a lathe. If they find a knot or defect they throw that piece out. I asked the fellow what they did with those pieces and he said they sold them to a concern which makes buggies for a catalog house. The wheel is the most important part of a buggy, you know that.

Smith: I sure do.

Skinner: Well, these Smith & Wesson people know it, too, and they make their wheels just as strong as they can. They test every wheel before it goes on a job. Now you were asking about the width of the body. It is 24 inches wide and

56 inches long. Plenty of room to carry things home from town. And notice these corners, how they are reinforced with a V-shaped iron. They simply can't come apart.

Smith: What kind of wood in that body?

Skinner: Well, the frame is ash, and you know that means strength. And you can't buy ash cheap nowadays, can you?

Smith: You sure can't.

Skinner: Did you notice this body loop? That's the very latest pattern. I tell all my buggy customers that if a body loop breaks, no matter how long they have had the job, I'll get them a new one free of charge; and I think Mr. Blair will do the same.

Blair: Sure, I will.

Skinner: How many in your family?

Smith: Five.

Skinner: Well, you can't put five on the seat, but you can put the children in if you want to. The buggy will stand it. See here. (Climbing on dash and jumping up and down while holding to top.) You can put the boys on the top if you want to; it will hold them if they can hold on.

Smith: That's sure strong, all right.

Skinner: You were speaking of one reach instead of two. Did you ever see a farm wagon with two reaches?

Smith (laughing): Never did. I never thought of that.

Skinner: As a matter of fact, one reach is better than two. When you use two reaches you are more likely to spring the job out of true and then it won't track.

(Mr. Skinner called Smith's attention to the genuine leather trimming and other points about the job, showing a comprehensive knowledge of the construction of the vehicle.)

Smith: What do you get for these buggies over at your place?

Skinner: Well, sir, I was much surprised to hear Mr. Blair say \$85. I get \$95. Never sold one for less. If Mr. Blair knew what it costs him to do business he wouldn't sell it at \$85. Why, I sold one of these jobs to a mail carrier several years ago and he told me the other day that he had run it 32,000 miles and it's as good as new except for looks.

Smith: Honest?

Skinner: As sure as you live. Why, Mr. Blair is selling these jobs too low.

Blair: I knew I was making you a good price—for you.

Smith: Come over her, Mr. Blair, I want to talk to you.

(They went to one side and conversed in an undertone. The stenographer couldn't hear what was said, but it was evident from the attitude of the dealer and the farmer, just as the curtain went down, that a satisfactory deal had been made.)

## NEW IDEA GOOD ENOUGH FOR YANKEES

There is an office in Amsterdam, Holland, which furnishes free to regular subscribers, mainly workingmen, but also some heads of industrial concerns, information regarding various subjects, which ordinarily could only be obtained at considerable trouble or expense. The organization, called the Central Bureau for Social Advice, was formed in 1898, and was suggested by the need of workingmen for some inexpensive place where they could go for advice on various practical subjects. Three definite objects were the basis of the organization: (1) to give information regarding institutions and regulations in the interest of workingmen; (2) to collect and assort data for this purpose; (3) to form a library.

Information is given not only to subscribers, but to anybody who asks for it. A fee is asked unless the inquirer is absolutely unable to pay. The director of the institution is a doctor of law, and the general management is in charge of a committee of nine persons elected by the subscribers. All information is given to the inquirer by letter. When it is very important, the subject is submitted to experts before an answer is given.

A special committee collects all documents relating to the history of workmen's societies in the Netherlands. Besides such documents the bureau has a library comprising books and

various periodicals pertinent to the work of the institution. The library contains about 13,000 volumes and over 800 periodicals, the latter including many from foreign countries. Many of the books are loaned to the library, while others are gifts from societies and individuals. The library is much used by the subscribers, and about \$1,000 a year is spent for new books, periodicals, and binding.

The bureau scans the newspapers and makes appropriate clippings, which are systematically catalogued for reference by patrons of the library who may be studying special subjects, and also publishes reports on various subjects pertinent to its work. Permanent members or subscribers each pay \$2 a year or a sum not less than \$40 at one time. Special rates are given to workmen's societies, being about 40 cents for each 100 members.

Besides constant requests for information from subscribers, requests have also been received from other private individuals, from industrial concerns, insurance companies, employers' organizations, labor bureaus, municipalities, foreign social institutions, and foreign governments. Some of the subjects upon which advice and information have been given are co-operation, savings, loans, pensions, illness, burial funds, people's lodging houses, labor contracts, regulations in commercial enterprises, measures against unemployment, municipal-workmen regulations, minimum salaries and maximum labor hours regulations, etc.

### EFFECTS OF LIVE AND DEAD LOADS

Physics teaches that a pound of feathers weighs just as much as a pound of lead, although the average man still is apt to have moments when he questions the ponderosity of these substances. That there is a more subtle difference between hauling a ton of feathers and a ton of lead on a motor truck than that involved in the mere bulk of the commodities, however, is a point that is likely to escape one who has not had a practical demonstration of the point involved. Said a motor truck manufacturer:

"If you had two trucks of the same construction making equal trips over the same route and carrying equal loads, one of wool and the other of iron, which would wear out its tires faster? The one that carries the iron, of course. And the reason is that iron is inelastic, relatively speaking, while wool possesses a considerable amount of resilience. Hence wool, or any other 'live' load, causes much less rapid depreciation in the tires, and in the entire mechanism of the vehicle for that matter, than does a load which is absolutely inert."

A certain resemblance may be traced between the effect on the mechanism of the car of hauling live and dead loads and of running on pneumatic and solid tires. The difference is that between a positive shock and a cushioned blow.

### DANIEL T. WILSON FAILS

Daniel T. Wilson, New York City, doing business as Keyes and Wilson and under the trade mark Flandrau & Co., filed a petition in bankruptcy January 30.

The concern conducted by the petitioner is one of the oldest and best known in the business. It occupies the premises 406-8-10-12 Broome street, extending back to Lafayette street, Manhattan.

The liabilities listed in the schedules amount to \$89,115.15, and the assets are placed at \$71,056.22. Of the assets the sum of \$57,558.30 is unsecured, owed to him by 177 creditors.

The act of Mr. Wilson in filing his petition in bankruptcy was done only after considerable urging on the part of his close personal friends, with whom he has been associated for many years, both in social and business life. In his petition Mr. Wilson explains that he is surrendering all his property for the benefit of his creditors.

The matter has been referred to Selah B. Strong, one of the referees in bankruptcy.

### EFFECT OF AUTOMOBILE ON OTHER BUSINESSES

The increased use of the automobile in England, while it has brought prosperity to the automobile and cycle makers as well as to those who deal in accessories, automobile clothing, and other articles attached to the trade, has apparently had a correspondingly detrimental effect upon some other businesses. For instance, one of the leading house painters and decorators in Birmingham tells the writer that people are spending their money on automobiles and their upkeep instead of on the redecoration and painting of their houses, so that his business has been seriously affected.

People, he stated, were living more in hotels and on the roads. The furniture trade, it was stated, had been seriously affected by the desire for the automobile. People were spending less time at home, caring less for the attractiveness of home, and devoting their surplus money, and even more than their surplus, to the purchase of automobiles and their upkeep; many, it being stated, purchasing motor cars without any idea as to the cost of their maintenance and the loss through depreciation. The hope and belief was expressed, however, that as the British people are home loving, the present craze would eventually subside.

Real estate agents state that there is a decided tendency for people who do not own their own houses, and even for some who do own their houses or the leaseholds of the same, to take smaller houses and to spend the saving on rent and taxes in the purchase and maintenance of their automobiles. The theatres make the same complaint as do those, though in a smaller degree, who sell musical instruments, while booksellers and even men's and women's clothiers and costume makers find the motor car somewhat of an interference and injury to their business. Where a man can not afford a motor car, the present development of the motor cycle and the demand for the same is having, though in less degree, a similar effect.

### FOREST FIRE PREVENTION AND CONTROL

The forest fire season of 1912 marked the second year's operation of section 2 of the Weeks law. This section authorized the Secretary of Agriculture to co-operate with states in protecting from fire the forested watersheds of navigable streams.

The importance of protection from forest fires is shown by the efforts being made to bring it about. The Forest Service is charged with the protection of 163 national forests, aggregating nearly 200,000,000 acres. Eighteen states have effective forest fire laws, enforced by efficient organizations under a state forester or a chief fire warden; seven others have made a start in this direction. Private owners in the northeast and the northwest have organized protective associations, each member of which is assessed for expenses according to the acreage of his holdings. Individual owners over the entire country are more and more realizing that not only is it practicable to protect their timber, but profitable also, because of its constantly increasing value. The joint efforts of all these agencies are reducing the fire risk and making the task of each easier.

It has been estimated that an average of 10,000,000 acres is burned over annually in the United States, with a money loss of about \$25,000,000. The loss in some states is enormous.

### VEHICLE MAN MARRIES

Friends of Beale Edward Poste, president of the Poste Buggy Company, Columbus, O., were surprised to hear of his marriage to Mrs. Margaret Helena Brownell, of Lexington, Ky.

The ceremony was performed in the home of the bride's mother, Mrs. Mary E. Adair, in Lexington, by Rev. Dr. J. W. Porter, of First Baptist Church, that city.

The two left for the east immediately after the ceremony and will go to Cuba before returning to Columbus, where they will live at the country home of Mr. Poste.

## LESSONS FROM OLD CARS THAT BUILDERS MIGHT APPLY TODAY

Are there any lessons to be learned from the Benz and other cars that were so very popular in England ten years ago? writes J. H. Knight, in *Motor*, an English publication. I think there are, he says. Firstly, these cars were very reliable; secondly, they were very cheap to run. I reckoned that my Benz, running 2,000 miles a year, cost me between \$150 and \$175 a year; this was with gasoline at 25 cents a gallon. This cost included all repairs and a proportion of the man's time for cleaning and doing slight repairs and adjustments.

The great disadvantage of the Benz car was their slowness uphill, and this was probably the reason of so many being sent to the scrap heap. It was disconcerting, when going up a hill at five miles an hour, to be overtaken and passed by another car going ten or fifteen miles an hour.

The wire driving wheels were not strong enough—at least, not on the early cars—and required a good deal of repair. Notwithstanding, I regret having laid aside my faithful slave of 13 years.

If I have to run into the neighboring town, a distance of two miles, I have to take a car weighing 1,200 lbs. It is true I get there in two or three minutes less time than on the Benz, but five or six minutes a day is not a great saving of time; the larger car, with its pneumatic tires, costs about twice as much to run, it takes longer to clean, and there is the risk of puncture.

It has occurred to me that it might be possible to make a light four-wheel car having the advantage of the light motor-

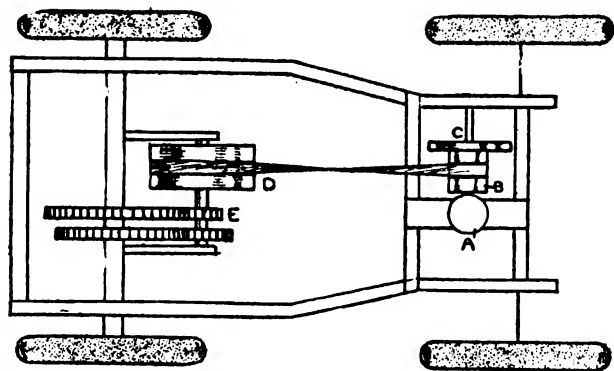
builder all his life, till compelled by the motor movement to turn his attention to the newer sort of vehicles, came up and said to me: "That's how I think a car should be made; nothing can be more simple." Probably only the old motorists know what the New Orleans was like, hence I may be excused giving a description of the car, also a diagram.

A single-cylinder air-cooled engine was placed under a small bonnet, cooling being assisted by a fan driven by a friction wheel off the flywheel; the engine was placed across the frame, not fore and aft, as in our modern cars. On a prolongation of the crank shaft was a wide pulley, 4 in. or 5 in. in diameter and 8 in. or 9 in. face. From this pulley a crossed belt ran aft to two pulleys on the driving gear; between these pulleys was the loose pulley, the two outer pulleys being geared in different ratios to the live axle, and forming the two speeds, so that by shifting the belt to right or left by the striking gear each speed as desired was put in gear. There were no chains used, the one belt and the two pairs of spur wheels comprising all the driving mechanism. It seems almost impossible to design a simpler or cheaper car.

I do not know why these cars disappeared so soon from our roads; whether the craze for speed caused them to be scrapped or whether they gave trouble I cannot say.

I would suggest a car somewhat on these lines, with, perhaps, a more powerful engine, and water cooled, but with larger wheels, 2 ft. 10 in. or 3 ft., in place of the small wheels of the New Orleans, with solid rubber tires. It should have elliptical springs, or, if not, good shock absorbers. It would be cheap to run, there would be no chains and sprockets to be renewed. There should be no difficulty in enclosing the gears in oil baths. Reversing could be effected by V pulleys, and a motor cycle belt tightened by one or two jockey pulleys. It would carry two, and should average 18 miles an hour on give-and-take roads.

If some firm were to take up the manufacture of a car on these lines, I think they could be sold well under \$500. A cheap and reliable car can be made that will tap a stratum of society that will provide ready buyers.



Plan of New Orleans Car

cycle engine and the large wheels, springs and comfortable body of the Benz. Now, I have in the loft over my motor house an old Benz engine belonging to a friend. I have just weighed this engine; a few parts, including the carburetor, are missing, but the engine alone can hardly weigh less than 180 lbs., and to this has to be added the weight of two gallons of water and the so-called "condenser." This gives a weight of about 210 lbs. I believe a motor cycle engine of 4 h.p. to 5 h.p., with water-cooled cylinder, does not weigh more than 56 lbs., possibly less. Adding the weight of two gallons of water and a radiator, we should have 86 lbs. against 210 lbs., so by having a more powerful engine of modern type there would be a saving of weight of 124 lbs. The driving gear of the modern car, with its wooden wheels and a rather longer wheelbase, would be slightly heavier than the old Benz; but on the completed car there would be a considerable saving of weight, perhaps 60 lbs. or 70 lbs. lighter than the older car, and at least 30 per cent. faster. Ten or twelve years ago such a car as I have suggested was on the market, but it had small wheels with pneumatic tires, not the larger wheels of the Benz. It originally came from the Continent, and was known as the Georges Richard. For simplicity and fewness of parts it would be hard to beat. The last I saw was in a garage, where it had come for repairs. While I was looking at it the senior partner of the garage, who had been a coach

## WILL VISIT UNITED STATES

The invitation of the American Society of Automobile Engineers to the British Institution of Automobile Engineers to visit the United States in the spring has now been extended to members of the Society of Motor Manufacturers and Traders, Ltd., and has been accepted by them, so that it is expected that the party will be a very large one. A joint committee of the two English bodies is at work on the preparation of the programme, which will be one full of interest. A number of automobile factories will be visited, together with works producing steel, springs, tires, carriage work, and other details of the automobile, while three days will be spent on board the biggest passenger steamer on the Great Lakes on the occasion of the annual summer meeting of the Society of Automobile Engineers. These three days will therefore be divided up between the reading of papers and the visiting of places of interest on the Great Lakes.

## "CYCLE CAR" IS OFFICIALLY DEFINED

Speculation which has been rife regarding just what is a "cycle car" and just what is not a "cycle car," that hybrid form of vehicle which is neither an automobile nor a motor cycle, at length has been set at rest by a joint ruling defining the term which has been issued by the British Auto-Cycle Union to the Royal Automobile Club of Great Britain. In it, it is pointed out that the chassis weight of a cycle car "must not exceed 600 pounds, inclusive of the weight of the tires, or, in the case of those vehicles the bodies of which are separate from the chassis, the total weight, all on and ready for the road, but without fuel, oil or water, must not exceed a total of 700 pounds."



## THE TWO VERSUS THE FOUR-CYCLE ENGINE

Mr. Chas. E. Duryea, in the latest booklet describing the Duryea system of automobile construction, makes some interesting remarks on the pros and cons of the simpler type of engine as used in the chassis bearing his name. He says:

In the four-cycle engine the valves often leak, and have to be taken out and reground. All parts of the mechanism are subject to wear, and are liable to make trouble and noise, besides adding weight and using up power by friction.

It will furthermore be seen that, while in the two-cycle engine there is no possibility of the moving parts getting out of adjustment, since the ports must forever open and close at exactly the same place in the piston stroke as the day they were made, in the four-cycle there must be a readjustment every time there is wear, or every time the valves are reground. This readjustment is an operation requiring delicacy and mechanical skill, and, while many owners have acquired the ability to do this work themselves, it is not a credit to the engine design that they have to do it.

This point is important enough to warrant repetition. The valve mechanism of a four-cycle engine is of necessity bound to get out of order sooner or later. The corresponding parts of a two-cycle motor cannot possibly get out of order—there are no such parts.

These advantages of the two-cycle motor are absolutely undeniable, and are so important that they cannot be ignored. Partially off-setting these, and other advantages, certain disadvantages are charged against the two-cycle engine which must be considered fully and fairly.

(A) The first of these is that the two-cycle engine does not give twice as much maximum power as a four-cycle engine of the same size does. This is true, because it does not get so nearly full charges of fresh gas at high speeds as does the four-cycle. By the usual automobile formula, one cylinder of a two-cycle engine gives 17/10 as much power as the same size cylinder in a four-cycle engine, but in operation, when the most power is required, as in going through deep mud or in hill climbing, with the throttle wide open, but the engine nevertheless running slowly, the two-cycle engine does take in almost full charges of gas, and under these conditions, which are the important ones, it does do practically twice the amount of work available from the same size four-cycle engine. In short, it is a better draught horse than racer, although a pretty good racer, since it is used for aeroplane and other speed work, and is able to run faster than 2,000 revolutions per minute.

(B) The next charge is that the two-cycle engine is less economical of fuel than is the four-cycle. This is not true. In every case economy is a matter of good design. When a high-grade four-cycle engine is compared with a cheap and carelessly made two-cycle engine, it is undoubtedly better; but, with equal care in designing and in workmanship, there are several points in which the two-cycle engine has an inherent advantage. First, it always works at a uniform compression, whereas the compression of a four-cycle engine varies with the throttling; secondly, the burned gases in the two-cycle engine expand to the same point in the cylinder from which the compression commenced—that is, to the point where the piston opens and closes the port. In the four-cycle engine the compression takes place the full length of the stroke, but the expansion can take place only to the point where the exhaust valve opens, say, at four-fifths stroke. Thus we see that when the four-cycle engine is working with the throttle only partly open, it is inherently uneconomical because the burned gas is not allowed to expand to as great a relative extent as it does in the two-cycle engine.

While dealing with this rather technical question, it may be well to point out that the so-called "long-stroke" motors

which have recently been introduced, make no gain whatsoever in economy by reason of the long stroke, because they do not increase the length of the expansion stroke relatively to the length of the compression stroke. It may be interesting to know, and may illustrate how much nonsense is talked in the automobile trade, that the reason long-stroke motors were introduced in Europe is that the laws tax motors in proportion to the diameter of the cylinders, and not in proportion to their cubic contents. Hence taxation, which in England is an important matter, is lessened by having cylinders long and narrow. But when this practice is copied in the United States it becomes wholly a matter of fashion. It is a "talking point," and nothing more.

(C) Some claim that the two-cycle engine cannot be throttled so well as can the four-cycle engine. This is also untrue, as shown by the fact that our cars can be run at all speeds from three to thirty miles per hour, or over, on high gear; 200 to 2,000 revolutions per minute, or more.

(D) Others claim that the two-cycle engine "back fires," and this is true of two-cycle engines which are not well designed and protected by proper screens.

(E) Finally, objection is made that it is difficult to keep the crank case gas tight, that the initial compression may take place. The bearings through which the crank shaft passes must, it is true, be tight, as must the bearings of any good engine, and the objection is well taken if the engine is not well made; but, by using well fitted long bearings and lubricating with compression grease cups, there is no trouble from that source; and if, after thousands of miles, a little wear appears, it is easily and cheaply remedied. Remember that the pressure in the crank case is only about six pounds per square inch, and that the vacuum is never high, because our check valve admits mixture so freely.

To get superior results from a two-cycle engine, more care must be used in its design than is necessary with a four-cycle engine. The ports must be of right size, and they must open at just the right place. The "deflector" must be of the right shape and the piston must fit, but when these things are once right they are right forever, and, as stated above, there is nothing which can ordinarily go wrong.

There are many good two-cycle engines made today. We use two cylinders of 3¼ in. bore and 3¼ in. stroke, which, by accepted formula, figure about 19 h.p., and a far larger proportion of it is available at low speeds than is the case with a four-cycle engine. These cylinders are made of close-grain cast iron of a low expansion coefficient. They take a fine finish, resist deterioration, and being ground true while hot, are not distorted by heat. They lie almost horizontally, but the heads are inclined upwards, so that the oil flows back into the crank case or out into the exhaust, thus keeping the cylinder heads and spark plugs free from fouling.

Back firing, spoken of above, is the flame from a burned charge communicating itself through the transfer passage to the fresh gas in the crank case; and this is prevented by proper design, including a Davy screen in the transfer passage between the two ends of the cylinder, through which screen the gas passes. The principle is that of the Davy safety lamp used by coal miners, and so long as these screens are intact there is no back firing.

The transfer passage is covered by the transfer plate, and in this is mounted the in-take check valve (patent applied for), which consists of a very light steel coned disc mounted on the end of a hollow valve stem in which there is a light spring. The total weight of these moving parts is about ½ oz., and the tension of the spring is so light that the valve opens with a mere breath. No such device has ever been used before, and

we are able to get results never before attained. The very slightest vacuum in the crank case opens the valve and sucks in a full charge of gas from the carburetor during the full upward stroke of the piston—a steady pull conducive to good carburetion. In the warm crank case the mixture is warmed, and its gasoline spray thoroughly vaporized. Here the lubricating oil largely deposits, since its carrier, the liquid gasoline, has turned to vapor.

We use no gaskets in our construction. The aluminum crank cases have but two large and two small openings, with ground joints, metal to metal; once right, always right.

The crank shaft bearings are long. The bronze bushings fit perfectly into place, and can be removed when, after long wear, any objectionable crank case leak is manifest. And, since our inlet check valves open so easily, there is no tendency to suck air through the crank bearings when worn, which would make starting difficult.

I have designed for quick inspection and easy access. After some running, all gasoline engines show a deposit of carbon in the cylinders, which, to get best results, must be removed. In our engines five screws and two nuts hold the cylinders in place. They can be removed in less than five minutes and the carbon deposit removed, at which time all parts can be inspected. Four screws hold the transfer plate; and the removal of this permits the Davy screen to be lifted out for inspection and cleaning.

These screens clog in time with road dust too fine to be readily filtered from the air, and are cleaned by scraping, and burning the oil over a gas jet or fire until the screen looks dry, when a tap knocks the dust free.

### METRIC SYSTEM

The African Engineer points out that it is frequently asserted by the advocates of the metric system that their arithmetic is so much more simple. But is it, in reality? Multiplication and division by 10 certainly are simplified, but this represents only one-ninth of the possible multipliers or divisors. Then, again, the sub-divisions of the units are far too coarse. Although the metric system is, theoretically, a decimal system—that is to say, the sub-divisions are tenths—in practice the divisions are thousandths. Thus the centimetre and decimetre are practically unknown on the Continent, and a man, for instance, is said to be 1 metre 760 millimetres high. In England he would be described as of 5 ft. 10 in.—palpably a more comprehensible measurement to the unbiased mind. Another argument frequently advanced in favor of the metric system—the relation between the various units—loses much of its value on investigation. When calculating the size of a tank it is certainly useful to know that a kilogramme, a litre, and a cubic decimetre of water are all the same; but this information is of little help in designing a cistern for any liquid. Anyhow, the British system includes a number of similar relationships, and if the investigations of Mr. Wilfrid Airy are taken into consideration these relationships are far more rational than appears at first sight. He holds that our pound is the weight of an Egyptian "hin" measureful of corn, and that the pint and hin are the same. He also claims to have established that the British foot is of Egyptian origin, and has not been evolved from the inch of three barleycorns laid end to end, as is often stated in school books. During the discussion on Professor Bohle's paper several of the speakers mentioned the complexity of the tables which children are taught at school as one of the drawbacks to the British system. That school children are bothered with these tables is, however, rather a fault of the education than the system of measures. In after life, ell's, hands, nails, poles, perches, and a number of other obsolete measures have no interest for him, and if by chance he happens to find them referred to their value is easily ascertained from a book of tables. Shorn of these and similar little used units, the British system is not nearly so complicated as its detractors suggest.

### PIERCE-ARROW LIGHTING SYSTEM

The system of wiring for automobile lighting as used by the Pierce-Arrow Company is known as the single wire or grounded system. In such a system one terminal of the battery is grounded, one terminal of each lamp is grounded, a single wire or cable is connected from each lamp through a fuse, switch, etc., to the underground terminal of the battery, and the chassis is made to serve as a return wire for all of the circuits.

The use of such a system does not involve any radical departure from the ordinary two-wire system. Let a ground occur on either of the lines of a two-wire system, which is very common, and what you have amounts practically to a single wire system. The use of two wires is unnecessary where you have the metal body to serve as one of the wires. This was realized long ago in the wiring of warships and such a system is in common use for that service.

The Westinghouse generator used in connection with this system is adapted for such service by having one terminal grounded permanently. The lamps used are arranged for the single wire system and therefore have a single center-terminal of large area. The short circuits that are often experienced on double terminal lamps are thus avoided. The sockets are of the single wire "Edi-Swan" type which holds the lamp in a bayonet joint under spring pressure so that it cannot work loose. Lamps, therefore, do not go out because of poor contact or because of the bulb unscrewing in the socket.

The chief advantage of the single wire system in comparison with the double wire system lies in the fact that it is much simpler and less liable to give trouble. Only about one-half as much wire and fewer connections are required, which reduces the chance for trouble by nearly one-half. There is less voltage drop in the various circuits for there is only the drop on one wire to be considered, and therefore smaller wire could be used if desired. The sockets and connectors in a single wire system can be built more ruggedly for there is more space for insulation between the outer shell and the center contact. The trouble in the sockets due to short circuits, to bulbs making poor contact or unscrewing, is practically eliminated. Also, trouble due to battery ignition system operating continuously, which is a common occurrence on the two wire system due to a ground in one of the wires, is not possible on the single wire system.

### DUTY-FREE IMPORTATIONS IN 1912 A BILLION DOLLARS

Practically one billion dollars' worth of merchandise from foreign countries entered the United States free of duty in the year just ended. The exact figures, just completed by the Statistical Division of the Bureau of Foreign and Domestic Commerce, are \$992,376,460, against 794 millions in 1911, 635 million in 1907, 530 million in 1905, 408 million in 1902, and 342 million in 1900, the value of non-dutiable merchandise imported having thus practically trebled in the last twelve years. These figures of duty-free merchandise relate only to that coming from foreign countries. If to these were added the value of merchandise entering from Hawaii and Porto Rico, all of which enters free of duty, the total value of non-dutiable merchandise entering continental United States in 1912 would be \$1,084,000,000, since the merchandise received from Hawaii in that year was valued at \$50,000,000, and that from Porto Rico, \$41,000,000. While most of the merchandise entering from the Philippines is also non-dutiable, it is included in the general group of imports from foreign countries, since those islands are still classed with foreign countries in the records of our foreign commerce.

The principal articles are hides and skins, india rubber, raw silk, raw cotton, fibers, tin, copper, nickel, wood, oils, furs, fur skins, coffee, tea, cocoa, fruits, nuts, spices, fertilizers, etc.

**STEVENS-DURYEA ADJUSTABLE REAR SEAT**

An adjustable rear seat is the motor car novelty this fall, and is probably the greatest single advance toward increased comfort that could have been made; for, however easy riding a car may be, the passenger's enjoyment depends a great deal on his sitting position. And that is a matter of leg room and seat angle.

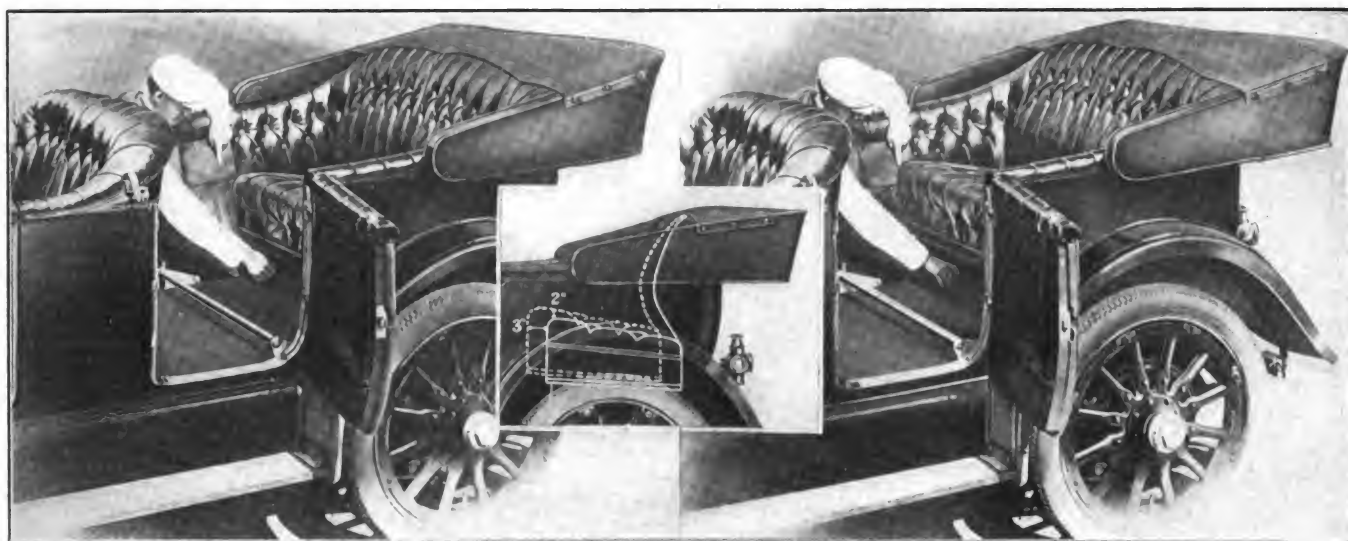
The ordinary type of seat is built with the "average person" in mind. Just who this average person is, few people have ever been able to tell; but it is the experience of nearly everybody that what fits or suits the "average person" won't do so well for ordinary mortals.

In designing their new car—which they intend for an epoch maker—the Stevens-Duryea engineers gave special attention

manufacturing 15,000 cars a year, and having factories at Tarrytown, N. Y., Newcastle, Ind., and Providence, R. I. At that time, also, he was at the head of the Briscoe Radiator Co., with a factory at Detroit and a branch factory at Newark, N. J.

The average Englishman is not overwhelmingly interested in American company promoting schemes, and has doubtless but a vague knowledge of the formation of the huge United States Motor Co., of which the Maxwell-Briscoe was one of the units, of the recent financial complications of that concern, of the various changes in management, etc. To condense it for the purposes of this story, Mr. Briscoe "just quit," as he tersely expresses it, resigned his position as secretary of the Automobile Board of Trade, and slipped over to Europe.

"To become a European motor car manufacturer?" I asked, glancing round the busy drawing office.



to ease. You pick out one particular chair in a room because it "rests your back most," or "fits your legs best," and what could add more to your enjoyment of motoring, when you haven't the same opportunity to "get up and move around," than a seat you could adjust in whatever position you liked best? A seat you could make into any kind of a chair, as it were, without even getting up out of it. By just turning a little wheel handle, down out of the way but within arm's reach, it can be raised or lowered two inches or moved forward or backward three inches.

**FRENCH-DESIGNED AMERICAN CAR**

A leading American manufacturer of medium-priced motor cars, with a factory at Billancourt, France, appeared to be about as unusual a combination as a Milwaukee brewer with an establishment at Burton-on-Trent, says a writer in (London) Motor. It seemed to flavor of invasion a l'outrance, of hearing the lion in his den, or, if you prefer the simile, of bringing coals to Newcastle. In any case, it suggested an investigation, for it was not to be supposed that the American manufacturer had settled himself down in the neighborhood of Renault, Darracq, Panhard, Clement-Bayard, Unic, and other of the continental leaders merely for the sake of the good company.

Within a hundred yards of the old city walls, and about as many from the river Seine, in a district where every other man appears to have some direct or indirect connection with the motor car industry, we found Mr. Benjamin Briscoe, at the head of a staff of American and French engineers, engaged in work on engines, gear boxes, rear axles and the other necessary components of a motor car.

My last meeting with Mr. Briscoe had been in New York, when he was head of the Maxwell-Briscoe Co., a concern

"Why, not exactly," replied Mr. Briscoe. "Although I have sold out all my holdings in the old Briscoe concerns, I am not a quitter, as we express it on the other side of the water."

"Nor an invader?" I queried.

"Not just for the present. I have come over to France to build a car for America, and as we Americans are not in the habit of looking upon the United States as limiting the globe, the car will probably find its way into a number of other countries.

"It may be a compliment to Europe, but the fact remains that I believe it possible to develop the design of a car better in France than in the United States. Our strong points at home are factory equipment, quantity production and efficiency. Europe has nothing to teach us in these respects. But the peculiar conditions prevailing in Europe tend towards careful experimental work, detailed refinement, and advanced design in a way that is not possible under enormous outputs of stereotyped models.

"My idea is to combine the two. To link up the advanced European design with the most highly developed American quantity methods. This French factory has been established for the purpose of carrying out the union. When the fusion is complete, and we have a car combining all the improved features of European design, together with the possibility of applying it to American methods of quantity production, it will be produced in quantities in America, probably in Detroit, for my present intention is to return to Detroit."

"Well, in America, a car to 'make good' in the popular class must be sold all complete for the road at not more than \$1,000, or in your English money at £200. A car of this class which makes a hit in America will prove a success anywhere in the world. The trouble with so many American cheap car manufacturers is that they have been so busy on quantity that they have not had time to think about quality. With you-

efforts concentrated on a volume of 20,000 cars a year, it is a difficult matter to embody all detail refinements into your design so soon as those refinements are ripe for adoption. A man who is only building ten cars a year can keep his design up to date better than one who is building 10,000 cars. But he cannot build so cheaply. In opening this French factory we intend to have the advantages of both."

"How do the self-starting and electric-lighting propositions stand?" I asked.

"In America, no car owner will consent to crank his motor up every time he wants to start. And a man who has electric light in every room of his house will not tolerate such an old-fashioned system as oil lamps on his car. The American public want these things, even on cars selling at \$1,000; and when they want it we have to give it to them."

"Will the Briscoe car come on the English market?"

"As I see no reason why you should be deprived of a good thing, you might announce that it will. What we propose doing is to establish an assembling plant in England, and probably in other European countries, in which will be put together the European-designed car built in America on the most highly developed American quality lines."

"Time?"

"We shall be all ready for the 1914 season."

"Yes, the quantity will be big; I had better not give figures; but you can take it that it will be bigness on the American scale."

### HOW THE "SILENT" CAR HAS BEEN DEVELOPED

Nowadays the term "silence," as applied to the car, is a freely used one, but few pause to think for a moment that the term is only a relative one. There is no standard of silence which one can judge by. It is better, perhaps, to say that one car is relatively a quieter running one than the other. This problem of a "standard of silence" has been felt in connection with comparative tests of silencer efficiency, and it is a problem that has not yet been solved. The microphone and the telephone receiver have been put forward as means to this end, but so far no definite plan has materialized. To say that the modern car is a quiet running one is merely a commonplace statement; whether it will become a still quieter one is a matter for the future to decide. There are those who contend that many cars are, in fact, inconveniently silent, as it necessitates the driver being even more on the alert than with a car that gives some indication of its approach to other road users; particularly is this noticeable in town traffic.

A brief view of the steps by which relative silence has been obtained is perhaps not out of place at this juncture. That the car of a decade ago, short period as it is, was more or less a "rattlebox" is common knowledge. That was the period when chain drive was universal. The chain was soon worn out of pitch and rode on the sprocket teeth. The indirect top drive was in general use, and as gear-pinion cutting was not a fine art as it is today, it is easy to understand that the combination of a loud hum from the gear box and the crunching of an out-of-pitch pair of chains produced the characteristic "music" of the early cars. To this one must not fail to add the contribution of the "exhaust box," a more accurate definition of the plain sheet iron chamber fitted than is that of calling it a "silencer."

The adoption of the four-cylinder engine in place of the singles and twos was a step that contributed more to the general quieting down process than is generally credited, and the reason is not difficult to follow. An intermittent exhaust beat is bound to be more audible than a rapid succession of exhaust beats. There is the every day example of the locomotive. If one takes note of an express traveling fast, the beats of the exhaust are practically inaudible—instead of this there is a muffled sort of roar; but take the case of a train

starting and picking up speed, there is no question of the beats being audible. Hence it is with the faster running four-cylinder engine with its two exhausts per revolution of the crank shaft instead of one exhaust every two revolutions of the old type single. With the six-cylinder the advantage is even more marked.

The next advance in quieting the car was the great improvement in gear cutting and the adoption of the bevel drive in preference to the chain, which has all along suffered from defects consequent on the exposed position. With the improved bevel gear the chain and its disadvantages were eliminated. Following this, the gear box became a more accurate production with its improved gears, shorter shafts which eliminated "spring" and consequent vibration, and the general use of a direct top drive.

Within a more recent period it is the engine which has undergone a general overhaul, and one that has contributed immensely to the toning down of a multitude of minor noises which the early types of engine revelled in. The sudden arrival of the sleeve valve engine, and the proof it gave that it was the quietest running engine yet produced, undoubtedly was the best thing that could have happened for the poppet valve engine. The quieting down of the action of valves and timing pinions was taken seriously for the first time. Today, as a result of this step, the poppet valve engine, that is, of the high-grade type, with its specially shaped valve cams, large diameter valves of small lift, accurately cut and enclosed timing gear, also the enclosing of valve tappets and stems comes within measurable distance of the degree of quietness characteristic of the sleeve valve engine. A measure of the credit in obtaining silent running must be accorded to the general stiffening up of the whole chassis. The rigidity of mounting and proper alignment of all running parts is an important factor as it eliminates spring and consequent vibration.

### EASTERN LUMBER ASSOCIATIONS ENJOINED

The government's petition for a permanent injunction against the Eastern States Retail Lumber Dealers' Association, alleged to be a combination in restraint of trade, was granted in New York, January 9, by the federal district court.

The defendants include also the New York Lumber Trade Association, the Building Material Men's Association, the New Jersey Lumber Men's Protective Association, the Retail Lumbermen's Association of Baltimore, the Lumber Exchange of the District of Columbia, and others.

The government's petition, filed in 1911, alleged that the defendants were engaged in a conspiracy in restraint of interstate trade, operated through the instrumentality of black lists, fines and expulsions from membership, and that by trade agreements they arbitrarily fixed prices.

In the petition the government included itself as a consumer and asked that the defendants be perpetually enjoined from making any contract or combination in furtherance of their conspiracy. By this decision this is granted.

### THERMOID COMPANY PROMOTIONS

O. K. Patton, office manager of the Thermoid Rubber Co., Trenton, N. J., has been promoted to the post of assistant manager of the Chicago branch, handling mechanical rubber goods. Frederick Wilson is in charge of the Chicago office. E. B. Knowles, of the Ray 'Bestos brake lining concern, Bridgeport, Conn., succeeds Mr. Patton as office manager of the local plant.

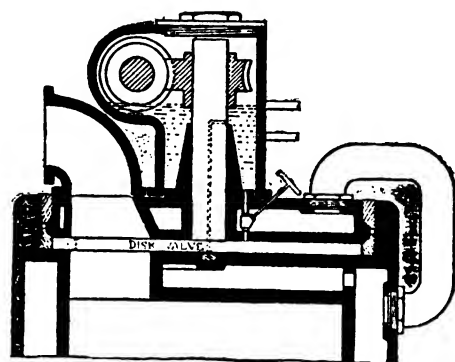
The company is making large shipments to France of automobile tire brake linings, used on the rear wheels of the machines. For the Paris market alone it is said the company has orders for close to 20,000 feet of brake lining. The tire department of the Thermoid plant is very busy. The company has arranged for a big display at the Chicago automobile show. The concern exhibited at the recent Garden show.

# TENDENCY IN DESIGN FOR NON-POPPET-VALVE MOTORS, AND SOME CRITICISMS

Casting one's mind back through the year just past, and summarizing the trend of automobile development, two features stand out preeminently for consideration. In each case it is the actual power unit which has chiefly called for thought and consideration. These two themes of development, then, have been in relation to the actual construction of the engine itself, the one line of thought being the question of poppet valves or other-type valves, and the subject of mechanical starting apparatus is the other development referred to. Although in bare numbers the progress made cannot be accounted as on a heavy scale, nevertheless in quality considerable weight has been thrown into the mechanical starting side of the balance as opposed to the manual cranking system.

With regard, then, to the engine question, the prolificness of inventors has been as great on the other side of the Atlantic

as usual (during the last four years), but in America a much higher percentage of the said inventions have seen the light of day. Both the sleeve-type and the piston-valve engine have had many new followers, but perhaps the greater majority have gone in for the rotary-valve design, the palpable theoretical simplicity being perhaps the great magnet in this



**The Beck disc valve motor, in which the disc is well protected from explosion pressures over a large portion of its area, and is also well cooled**

respect. It seems as though at last—at any rate in America—the basic principle for sleeve-valve, rotary-valve, or other non-poppet-type valve, namely, the due protection of the valve itself, and especially the lips, from the high temperatures of the early part of the explosion stroke, has now been grasped. Two methods of overcoming this inherent defect in most valve motions are available, the first and more obvious being the adoption of some type of protecting media, while on the other hand one may allow the heat apparently to take effect upon the portions on which it should not take effect, and then counteract the evil tendencies by excess of cooling in the part under consideration. Of course, this is a highly important factor in the rotary type of valve of almost any design, as the range of what one terms “running fit” is limited in temperature variation, and with this limitation follow as a natural corollary lubrication troubles and also the leak of the gases during the latter part of the explosion stroke, thus burning away the oil. It seems rather curious that this type of plain rotary valve should now come into vogue again after having been tried and discarded on a motor vehicle some 30-odd years ago, before even a motor was legally allowed to be in existence! Yet this is not more than the actual truth, as these valves were used on the early Butler motor bicycles and tri-cycles, and the plain disc valve was also used years and years ago!

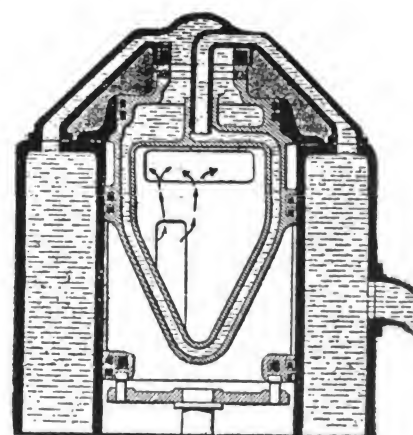
The disc type of valve is less troublesome from the lubrication and heat points of view, especially with regard to the question of clearance, which does not matter so much in this design, and, owing to their lightness, circumferential speed has

not so important a bearing either. It is fairly obvious, of course, that the ideal motor should undergo but little change in temperature, and that correlative to and in synchronization of the seat or the housing in which it works. There is also, of course, the question of the differential co-efficient of expansion in the metals, and in some cases this has been found in practice to prove a far more formidable question than it appears in theory.

A number of engines have given fairly good results with the localized system of intense cooling, and among the successes in this line may be classified the Henriot engine, so familiar on the Darracq car. In this engine there is, of course, a point of balance to be found, so as to obtain the best efficiency available with the design, while protecting the valve against the highest pressures and the fiercest temperature of the combustion, which is done, of course, by allowing the piston to protect the valve port for something like one-fifth of the stroke. With a reasonably well advanced spark this is, no doubt, an efficient means for protecting the valve, but, of course, the combustion is much slower (comparatively) with retarded ignition and the less fierce spark from the magneto due to slower speeds, in which case, of course, the circumstances obtaining are different from and not quite so satisfactory as those previously alluded to.

Another representative engine of the shielded-valve type of design is the Beck engine, which is fitted with a disc valve, and in looking at the illustration it is seen that it is provided with an abundance of cooling surfaces and a copious water supply. The question of valve cooling certainly seems to be settled in a fairly satisfactory manner, but with regard to the question of pressures it may be argued that, while the design removes some of the pressure on the valve, nevertheless this continual centralized pressure may lead to a certain amount of distortion, which, of course, would be prejudicial to the surfaces. It is fairly obvious that the power requisite to drive

this valve would be considerably less than that which is ordinarily requisite—a good point in favor of the design. If the adverse point raised above does not materialize to considerable effect in actual practice, then, as the area available for the effective pressure of the explosion on the valve is considerably less than is usually the case, it follows that the power requisite to drive the valve while the explosion and compression strokes are taking effect, would be considerably lessened; the balance would likewise be above the average.

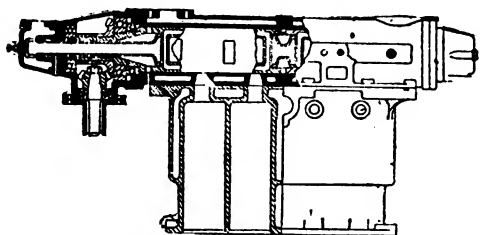


**The highly ingenious method of cooling the rotary valve of the Itala engine—the water is led right through it continuously.**

One can hardly refer to the question of localized intense cooling without adverting to the piece de resistance of design work in this connection, namely, the Itala rotary valve. The illustration reproduced shows in a marked manner how far



reaching is the active brain of the Itala designer, and that, having once conceived such a piece of ingenuity, he should further have the courage of his convictions to put it into practice, and yet further, again, to make a success of it, is indeed something of which he and the Itala Co. may well be proud. The design shows the method quite clearly, and it is seen



The Castiglione and Bolton rotary valve engine with externally adjusted packing glands.

fact that the arrangement for water cooling the valve necessitates that the water pass the valve on its way from one cylinder into the other. It was argued from this fact that the cylinders would therefore have different temperatures and, consequently, different actions and unequal expansions might affect the valve operation.

"While giving credit to the author of this criticism for his ingenuity, one must admit," says Motor, "that it is hard to see anything in it beyond ingenuity, and, so far as the writer is concerned, he would be prepared to wager that a careful thermometrical test would show but the minutest variation in temperatures, and that such variations would be wholly negligible from a practical standpoint."

One of the greatest troubles with nearly all designs of rotary valves is the question of balancing the explosion pressures (or taking them) and preventing the leakage of gases from the valve port to the wearing surfaces of the valve itself. Of course, the common thing to fall back upon for this purpose is a piston ring, possessed of a fair measure of expansive tendency, and it is generally found preferable to have floating rings instead of the pinned type, as used in the majority of ordinary piston constructions. In this way, if they are so disposed, they may expand, and by the pressure stored in them hold to the outer wall and remain stationary while the piston

that the water circulation is taken right down and through the inside of the rotary valve, cooling it in a thorough and isothermal manner. It is said that some genius in search of an adverse point in this design raised the

bearing face of the valve and probably eventually finds its way back into and out with the exhaust gases.

A rotary valve of English origin, namely, that of Castiglione and Bolton, shows a considerable amount of thought in regard to the question of avoiding the probability of leakage in leading the water into and away from it. Of course, in a water cooling rotary type of valve there is always a danger that water may leak, and it has to be carefully guarded against; it is well, therefore, so to arrange the design that if water should then leak, it does not penetrate into the lubricated valve bearings. As may be seen in the illustration, the motor under consideration is provided with stuffing boxes, which are externally adjustable, but it also provides a means for separating the water and the oil, should some of the former leak through in spite of the precautions previously alluded to.

The Walker design of engine belongs to a class similar to the latest type of Henriod motor, in which the inlet gases are drawn from the inside of the valve at one end, so as to assist with the cooling. The restricted area, however, and the actual shape of the interior of the valve, might easily be improved upon for efficiency, while the heat question alone would add very considerably to the troubles already likely to be met with, owing to the irregular shaping of the valve. It is, however, an example of another line of thought, and those mentioned are but a few among the many engines which are now under the consideration not only of designers, but also from a manufacturing point of view.

The great question, however, which still seems to be wholly ignored in regard to the rotary and disc type of engines is that of efficiency, and nearly every design which comes under one's notice is palpably open to criticism from this point of view. However, this defect may be remedied in the near future.

## RUBBER NOMENCLATURE

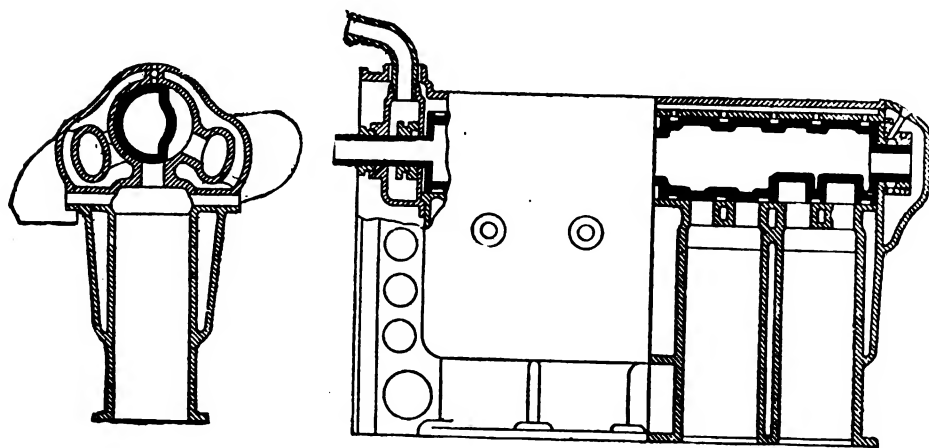
The India Rubber World speaks of an effort that is making that should interest buyers of crude rubber, so we quote what is said:

One of the most important problems before the rubber trade today is the simplification and standardization of the nomenclature of crude rubber varieties. Twenty years ago this problem did not exist, as the crude rubber that arrived at our ports came practically all from one source, and while there was some variety, to be sure, there was not enough to be especially confusing.

But all that is now changed. With the exploitation of many forest trees—hitherto untouched—for an additional wild rubber supply, and with the great development of rubber plantations in all parts of the tropical world, the variety of crude rubber now coming to our ports is very large and constantly increasing and necessarily occasions much confusion.

This matter was the subject of no little discussion at the Rubber Conference held in New York last September, and a committee was appointed of eleven members—three of them appointed by the Rubber Club of America, and eight of them by the Conference—to see what measures could be taken to simplify and systematize the crude rubber names now in vogue. This committee represented in its membership American importers, the plantations of the middle east, and of the Pacific, and the wild rubber interests of the Amazon. A number of meetings were held and tentative lists of names for the more important varieties of crude rubber were submitted.

With the ending of the Exposition and the conclusion of the



The Walker rotary valve engine, one of the types in which the inlet gases are taken through the valve for the purpose of cooling it.

itself revolves, preventing the up-and-down movement—or lateral movement, as the case may be—of the ring itself, solely by the side pressure on the groove. Consequently such a type of ring provides a fairly good medium for preventing the gases leaking by, and any impervious matter, such as a little stray water, or grit in the oil, is prevented from getting on to the

conference, the members of the committee—many of whom were from foreign countries—became widely scattered, but the American members together with the representatives of the Rubber Club, have been going over these lists with painstaking care.

There will be no suggestion of finality about these lists, but they will be an excellent beginning in the solution of one of the pressing problems in the rubber industry.

### NEW TYPE OF TWO-STROKE MOTOR

Probably no exhibit attracted more attention among engineers and engine experts generally, at the recent automobile show in Madison Square Garden than the "Twostrok" motor, and the universal opinion seemed to be that the inventors had shown something new in a gasoline engine.

This motor works on the four-cycle principle but the mechanism has been reduced so as to approximate to the simplicity of the two-cycle. There is no half-speed mechanism in the

sion space and acts like the "L" of an "L Head" motor during this compression stroke.

When the pistons reach the top of their stroke the port into the compressor cylinder closes and the port leading into the working cylinder opens. The firing chamber then practically becomes the "L" of the "L Head" for the power cylinder. At this point the charge is ignited and the gases passing through the port and over the piston in the working cylinder force it downward by their expansion, delivering power to the crank shaft. Near the bottom of the work stroke the exhaust port opens and shortly thereafter the port into the firing chamber closes. On the up stroke of the piston the spent gas is exhausted and the cylinder scavenged in the same manner as in the ordinary four-cycle engine.

It will be noted that each cylinder performs only two of the four strokes of the cycle and that two different strokes are being performed at the same time in the different cylinders. It is for that reason that the engine was named the "Two-strok."

By this action the work cylinder furnishes a power impulse on every revolution of the crank shaft while the compression cylinder furnishes no work at all. The result is that the shaft receives just the same work as in the ordinary four-cycle engine, but as there is no half-speed mechanism to be operated the power which would be required to run such mechanism is available for running the car.

One of the features which the inventors claim will add materially to the power and efficiency of the motor at high speed is the positive intake. When the intake piston begins its descent, the port into the firing chamber is closed and this piston coming away directly from the head causes practically a fifteen pound suction which insures the intaking of an entire cylinder full of gas. In the ordinary engine there is a compression space of twenty per cent. to twenty-five per cent. of the intake above the piston. This space is filled with burned gas at more or less pressure below atmospheric before any suction occurs and the suction can never rise as high as fifteen pounds.

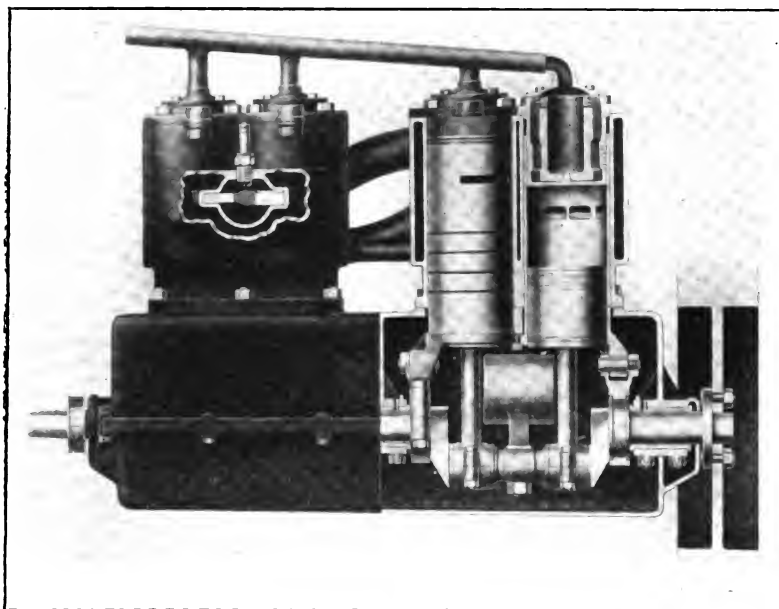
The inventors claim that the engine will give great power, high efficiency and low gasoline consumption and that its extreme simplicity will insure great durability and low cost of repairs as well as of construction.

The four-cylinder engine shown at the Garden contains only seventeen moving parts which is less than half the number required in ordinary four-cycle engines. The rights to this invention are held by the Duplex Gasoline Motor Company, 42d street and Broadway, New York City.

### BRITISH AUTOMOBILE TRADE

Consul Halstead says American competition in the automobile trade in the United Kingdom was keener in the first ten months of 1912 than in any corresponding period of previous years, there being about 25 distinct American makes on the British market. Two manufacturers of admirable cheap automobiles have put on the market light delivery wagons, the chassis of which are the same as for their ordinary motor cars, and these have sold in this district very satisfactorily. None of the highest grade American cars have been offered here, but several medium-priced American cars of excellent workmanship are sold in considerable numbers.

For the first ten months of 1912 the number of complete automobiles exported from the United Kingdom was 4,083, valued at \$7,611,021, an increase over the same period in 1911 of 574 in number and \$757,592 in value. Chassis were exported in the same ten months to the number of 959, valued at \$1,711,611, an increase of 483 in number and \$564,806 in value over 1911. The total value of the exports of motors cars, including complete cars, chassis and parts, for the ten months, were



engine, no gears, no cam shaft, all moving parts being operated directly from the crank shaft. Reference to the accompanying illustration will give a good idea of how the engine works.

As shown the engine consists of four cylinders with two pistons working on the same level at each end. Each cylinder pair is provided with a firing chamber which has a port opening into each of the cylinders. Within the cylinders are sleeve valves provided with ports which open the firing chamber first to one cylinder and then to the other. These sleeves are operated by eccentrics on the crank shaft. One of the cylinders is provided with an intake port and acts as a compressor. The other cylinder is provided with an exhaust port and is the power cylinder. Each charge of gas is required to pass through both cylinders and the firing chamber in its cycle through the engine.

Assuming the pistons to be at their highest level, which is to say, in the firing position, the intake port will be open and the port communicating from the intake cylinder to the firing chamber will be closed. As the piston descends a charge of gas will be taken into this cylinder. At the bottom of the stroke the intake port will close and the port communicating with the firing chamber will open. On the up stroke of the piston the charge of gas will be compressed into the firing chamber. No compression space is provided in either cylinder and the pistons rise to as near the head as mechanical conditions will permit. The firing chamber furnishes the compression

valued at \$14,151,782, an increase of \$1,802,250 over the same period in 1911. The increase in the export of motor cycles continues, 10,491 being expected in the first ten months, valued at \$2,047,813, a gain of more than 100 per cent. over 1911.

Imports of complete cars in the first ten months of 1912 numbered 6,621, valued at \$7,764,057, as compared with 5,452, valued at \$6,898,059, in 1911. Imports of chassis for the same periods amounted to 6,492, value \$7,972,067, in 1912, and 5,691, valued at \$7,197,923, in 1911, while the value of imported parts was \$13,393,499 and \$10,300,025 for the two years, respectively.

### PIERCE-ARROW TRUCK

Among the more prominent features of the Pierce-Arrow truck mechanism may be mentioned the worm gear drive; a form of driving construction that has been in use in England for over twelve years by many of the leading truck makers, notably by Dennis Bros., Ltd.; Guilford, Leyland Motors, Ltd., Preston, both names famous in Europe for the finest motor construction. At the time the Pierce-Arrow Motor Car Co. first offered to the public the worm drive truck it was met with considerable opposition, but the faith of the makers has been very substantially borne out for over two years in the hands of the public, and many cases are now on record where the worm drive construction has more than exceeded the initial claims. The worm gear has none of the many objections of

variety and the elimination of unnecessary machine changes. The hub makers, those making farm wagon hubs, have lately taken up with this idea, and are now working with the wagon manufacturers to the end that a lot of the useless sizes and patterns may be cut out and this class of hubs reduced to a few standard sizes and patterns. This will make for both greater efficiency and better satisfaction in the work. It will enable machine makers and operators to concentrate on the standard sizes and get them down to a finer point of perfection, while at the same time making them at less cost. The cutting out of useless sizes will also cut out the need for certain extra equipment for lathes and mortisers, and save many of the changes at machines that take up time and cost money. Nor will the good of this work stop here. It will be felt in the spoke business, too, for the cutting out of useless sizes in hubs will reduce the variety in spokes, save time, and simplify the work of making spokes for the hubs. It is a good idea, and should have the support and co-operation of every man in the business.

### A MILEAGE BOOK CASE

The Interstate Commerce Commission has been called upon to decide a question growing out of the withdrawal of interchangeable mileage books in South Carolina. The railroads



chains, such as continual lubrication, adjustment and cleaning. The worm gear meets the demand for silence, smoothness and cleanness. It has supplanted practically all other forms in Europe on account of features mentioned, also the high efficiency, reliability and economy. It costs no more than chains and will outwear chains at least two to one. It requires lubrication but twice each year or approximately every 5,000 miles.

The pressed steel frame has the advantage over many other types, because of the material of pressed special carbon steel, heat treated. This construction forms a very flexible structure, which lessens vibration and strains to the mechanism as well as the load carried. The flexible frame combines lightness with strength. The Pierce-Arrow truck chassis is largely assembled by the use of bolts and nuts, and rivets are practically absent, which means easy and quick replacement. Angle and structural frames have practically no resiliency; but must suffer all the inequalities of the road, the vibrations, strains and stresses. The flexible frame stands up under the most ultra-strenuous conditions, while rigid frames will rack, strain and shear.

### STANDARDIZING HUB WORK

One of the most important orders of the day in connection with the disposition to get greater efficiency all around, is standardization, with a view to reducing the confusion of

in that state formerly sold mileage books good on all roads, but required the holders to exchange the coupons for tickets at the various ticket offices. At the request of commercial travelers' associations, the legislature last year passed a law requiring the railroads to accept the mileage on board trains. The roads then withdrew the interchangeable books and required the traveling men to buy separate books for all roads. The prosecution of the case is in the hands of Attorney General Lyon and the members of the South Carolina railroad commission.

### DEATH OF FREDERICK M. RUWET

Frederick M. Ruwet, secretary of C. Cowles & Co., New Haven, Conn., died Friday, February 7, at Chicago, where he had gone to attend the Chicago Auto Show. Mr. Ruwet had been associated with C. Cowles & Co. for nearly 25 years and had been the secretary for the past eight years. In announcing his death, L. C. Cowles, president of the company, says: "It is not necessary to say to those who were intimately acquainted with him that we shall feel his loss most keenly. His kindness and genial friendship, as well as the inspiration of his enthusiasm for the welfare of this house and its many patrons, will be sorely missed."

He was a member of C. H. A. T.

## CLUTCHES

A clutch, according to the Standard dictionary, is "a power transmitting device operating as by friction or interlocking for securing or breaking rotative continuity." To the automobile owner or operator it is all of that and it may be more. Which is to say, that in addition to being a device by means of which the power from the engine is transmitted to the change gear mechanism and thence to the road wheels, it may be, and not infrequently it is, a fruitful source of trouble. And paradoxical as it may seem, nine times out of the proverbial ten the reason for the trouble is the very simplicity of the clutch itself.

If clutches were complicated and therefore required a little more attention the number of cases of clutch trouble probably would show a decided decrease. As it is, the majority of clutches are so very simple that they are not even thought of until something goes wrong. Then the clutch is blamed, and it is styled a "necessary evil." That it is a necessity is sure; whether or not it becomes an evil rests largely with the operator. Manufacturers make clutches right and they will stay right until they wear out, provided they are given a little—a very little—attention. But on the score that enough is sufficient, it is essential that a knowledge of the working of the clutch be obtained, though in this respect it should be remembered that the instructions generally issued by manufacturers are paramount and invariably should govern procedures.

Owing to the fact that internal combustion engines develop their power by reason of explosions within the cylinder walls, and as the greater the number of explosions which take place within a given time unit the greater will be the power developed, it is apparent that a certain number of revolutions of the crank shaft a minute are necessary before sufficient power will have been developed to move the vehicle. To transmit the power of the engine is the chief function of the clutch. It is necessary also to allow the engine to run "free" until it is generating the required power, and to permit the engine being disconnected from the driven mechanism temporarily to allow of the ratio of engine revolutions to driving wheel revolutions being changed, or in other words, to permit of gear shifting, which operation is practically impossible, at least without danger of damage resulting, unless at least one of the gears which it is desired to engage is stationary.

With external combustion engines, such as steam engines, and with electric motors, clutches are not necessary because the power is not developed in the engine or motor but is stored in the boiler or battery, as the case may be, and a little of the power, or the maximum which always is held in reserve, may be used at will to start the engine, or the motor, and consequently the vehicle, from a standstill.

As it requires more power to start a vehicle than it does to maintain it in motion, clutches must be so made that they may be caused to slip slightly while the vehicle is being started in order that the number of revolutions of the engine, and consequently the power, shall remain constant until the vehicle begins to move, when the power may be reduced and the clutch caused to grip firmly. If, for instance, the clutch on an internal combustion engine vehicle were a positive interlocking device, and supposing that it were possible to engage its driving and driven members with the engine running at the speed necessary to start the car, one of two things would happen, viz., something would break, or the engine would be stalled, and as soon as the engine stops the power stops.

Therefore, one of the considerations of a good clutch is that it must be possible to slip it at will both for starting and slow running, and also to relieve the engine by permitting it to "turn up" faster and still transmit power on long hard pulls. In other words, the clutch must accelerate the car "sweetly," without jar, and at the same time positively. On the other hand, the clutch must not slip except at the will of the operator. Last but not least, the driven member of the clutch, to which the gears are attached, must not spin unduly after the driving and driven members are disengaged.

As it is absolutely essential that the clutch be slipped at times, it is apparent that a positive interlocking device is impossible of application, and for this reason friction clutches invariably are used. At present, all pleasure vehicles which are the products of American manufacturers, and which have selectively operated change gears, are equipped with master clutches as differentiating from those built some years ago, which were equipped with individual clutches for each of the speeds as obtained by the gear changing mechanism. Individual clutches, while practical—and that they are so is proven by the fact that even today there are a number of cars in use which employ them—necessitate an inordinately bulky and heavy change gear mechanism, and this system now is obsolete. Instead, the master clutch, more commonly referred to simply as the clutch, has supplanted the older system, the result being increased simplicity; reduction of weight and of moving parts, and consequently a reduction in the complication of the car as a whole.

There are five types of clutches in use, as follows: cone, multiple disk, plate, expanding shoe and contracting band. A recent census of American manufacturers shows that car makers are almost exactly evenly divided as regards the use of cone and multiple disk clutches. The plate clutch comes next as regards the number of manufacturers who use it in one form or another; the expanding shoe practically has gone out of use, but one manufacturer now making use of it, while the contracting band clutch is used by only two well known builders in the United States.

## CREAKING WHEELS A SPECIALTY

A description of the funeral carriage of the late Emperor of Japan given in *The London Times* brings out some curious details. The coffin, consisting of several caskets one within the other, was a great size, measuring nearly 10 x 5 feet, weighing a ton and a half, and was moved to the car along wooden rails. The car, specially built for the occasion, was a two-wheeled vehicle weighing about the same as the coffin. The wheels and shafts were painted black, as was the interior of the body, which was box-shaped and covered with dull copper. Its body was surmounted by a rib with upturned ends. The wheels were so constructed as to make seven different melancholy creaking sounds as they revolved, this peculiar effect being the exclusive art of a family of carpenters at Kyoto, whose forefathers have constructed many a bier for the Imperial Court. The five oxen which drew the car had been specially chosen to accord with the colors associated from ancient times with Imperial obsequies, the shaft-ox being black and white with white forelegs, and the others being in pairs of brown and black and black and white. According to ancient custom, the Junior Fifth grade of Court rank should have been bestowed on the beasts, but this is not to be done in the present case, though the animals will be pensioned off and maintained in the Imperial pastures until their death.

## NEWARK AUTO SHOW

The opening of the Newark Automobile Show will take place February 15. It will disclose a scene for brilliance and magnitude never equalled in the state. More than 300 cars have been entered. Every available foot of space in the First Regiment Armory has been taken.

The decorators have already gotten busy on the armory. After the floor is down the carpenters will follow with the erection of the pergolas. The pergolas will be in white to simulate marble, and the rafters will be intertwined with southern smilax, hidden in which will be miniature colored electric lights. The entire decorative scheme is American. In fact, Manager H. A. Bonnell calls it "Jersey-American," owing to the fact that the design for the pergola is copied from one that is on George Gould's Georgian Court.

## STEIN DOUBLE CUSHION TIRE AND RUBBER CO. BOUGHT BY NEW ORGANIZATION

The Mohawk Tire and Rubber Co. has been organized at Akron, O., and has bought the Stein Double Cushion Tire and Rubber Co. plant and machinery, patents and good will. The new company is organized with a capitalization of \$350,000; \$250,000 common stock and \$100,000 7 per cent. cumulative preferred stock, redeemable at 110 with accrued interest after January 1, 1916. The Stein plant is located in East Akron, near the factory of The Goodyear Tire and Rubber Co. It consists of a 2½ acre tract of land, a brick factory in good condition, with switching facilities, and water; having a present capacity of between 75 and 100 tires per day. The company is to be organized without any water in the stock.

The president of the new company will be R. M. Pillmore, who for a number of years was general manager of The Akron Grocery Co., and is at present Director of Public Service of the City of Akron. The superintendent of the plant will be S. S. Miller, for many years connected with the manufacturing end of The Kelly-Springfield Tire Co., known in Akron as The Buckeye Rubber Co. Among the directors of the new company are C. K. Sunshine, president of the Sunshine Suit & Cloak Co., Cleveland, O.; C. D. Paxton, Cleveland, O., state agent for the Jackson Auto Co.; R. M. Pillmore and J. K. Williams, of the J. K. Williams Foundry and Machine Co., Akron, O., noted rubber machinery manufacturers; S. S. Miller and F. J. Mishler, vice-president of the Citizens Savings & Loan Co. The company expects to be able to place tires on the market to take care of the spring trade.

## GOOD PUTTY PRACTICE

A great deal of the bad work charged up to poor puttying belongs to poor putty making. It used to be an ironclad rule in the carriage paint shop to mix all putty thoroughly, working the white lead and the whiting so intimately together that the composition of the two pigments became one and the same thing.

When the mixture of putty composed in part of dry white lead and whiting is imperfect, as under the present stress of things it so often is, and the dry whiting becomes scattered in minute particles throughout the mass, trouble is certain to ensue. The putty driven into and plastered over the surface defects will show dry and hard so far as the carefully mixed lead and whiting is concerned, but the unkneaded dry particles of whiting under the water rubbing will wash out, leaving a defective and punctured patch, and under the sandpapering process it will tear out, leaving a similar result. In either case it will prove a "bad job" and necessitate reputtying and perhaps delay in the work. When the putty is properly kneaded and worked until it can be handled with the bare hands without sticking, and feels smooth and fine in the hands, it should, other things being equal, prove a good article.

In the actual work of puttying we like to use the pigment directly from the hand, carrying a small ball of it in the left hand, and working out from the ball a capsule about large enough to fit into each individual crack or crevice. By this method you are better able to use only enough of the putty to fill the cavity without splotching a surplus of material over the surface surrounding the defect.

The main point and the one never to be lost sight of in puttying is to confine the pigment strictly to the surface defect, crowding the material firmly into the crack or cavity and swishing the knife in a half circle over the outer surface to slick it up level and flush. That, in brief, is about all the technic there is to the work. Simply get a perfect blend of all the ingredients in the mixing, and then in the using of the putty place it where it belongs, using the minimum consistent with good surfacing.

## BONE GLUE AND HIDE GLUE

Complaints are often heard from glue consumers that they have received bone glue instead of hide glue, and it is requested to establish by test the fact whether the glue was made from hide stock or from bone stock.

The value of the grade of the glue is as a rule not considered, the buyer having received the impression that in some way or other the bone glue might be inferior, he feels uneasy and wants to get at the facts, and begins to ask for tests showing whether the glue is made from bone stock or hide stock.

The fact that good glues can be made from bone stock as well as from hide stock and that poor glues are produced from both is not appreciated. A glue maker gives inside facts. He says:

"The raw material from which glue is made is not a question of great concern with the average user. What he wants and imperatively demands is a thoroughly satisfactory result from the glue he uses, whether it be bone or hide stock. Unnecessary agitation and concern is not infrequently raised in the mind of the user by a general condemnation of bone glue of whatever grade, and however satisfactory may have been its working and the general result received from it by the consumer.

"The many excellent grades of bone glue that are now made find the same ready market as does its elder brother—hide glue. Indeed, the avenues for the use of bone glue have opened and broadened so rapidly that it is frequently found difficult to supply the demand. There are now many lines of trade where the use of bone glue is imperative to secure the thorough class of manufactured goods that modern merchandising demands, and it has been possible to secure these glues only by the intelligent effort expended upon them by the progressive glue manufacturer.

"For many lines of work well made bone glues cannot be supplanted by hide glues. The fact that a bone glue may or may not contain a trace of acid is not deleterious; hide glues also frequently show acid reaction and in many instances it is desirable that they should. In bone glue as in hide glue reasonable care and judgment should be used in their purchase and sale, but bone glue should not at any time be considered a menace to the trade to which it properly belongs."

From this it will be seen that the main question about any glue is the grade and the value established by the grade, and that the raw material from which the glue is made is not of any special interest to the buyer.

## TO TEST PURITY OF WHITE LEAD

To test the purity of white lead is not a difficult matter, and does not necessitate a knowledge of chemistry. The simplest way is to crush a small quantity of dry lead on a sheet of paper, fold it, and holding it over a plate or saucer set fire to it. The heat will change the white lead, if pure, into metallic lead, which will drop in the form of shining grains; if it is adulterated no indications of metal will be apparent. Another method is to spread a thick layer of the lead over a very thin pine board. On burning it the metallic particles will be visible only when the lead is pure. A more accurate method than either is that of using charcoal and blowpipe. Take a flat piece of charcoal about three inches long, one inch wide, and one-fourth of an inch thick, hollow out a small cavity and place within it a piece of the suspected lead about the size of a pea. Then take a blowpipe and a spirit lamp, and direct the flame on the lead; keep up a continual and steady blowing, and allow the blue part of the flame to reach the lead. In a couple of minutes the lead, if pure, will be reduced to a small, shining piece of pure metallic lead; if it be adulterated no amount of blowing will produce the same result. A tobacco pipe (common clay) having a small stem may, at a pinch, be used as a blowpipe.



## MOTOR SLEIGH

A motor sleigh is the latest contrivance of enthusiastic motorists who live along the St. Lawrence River. Theron O. Patterson, of Alexandria Bay, has constructed a machine that rivals the iceboat in speed. Mr. Patterson has used a 1905 12 horsepower four-cylinder Franklin motor, and has mounted it on a light, high sled. The craft is propelled by a large wooden propeller blade similar to those found on aeroplanes.

The engine is mounted on a strong wooden frame the front part of which is supported by a small set of runners by which the motor sleigh is steered. The driver's seat is in front of



the motor and the driver is protected by a canvas sloping hood similar in shape to the sloping hood found on the Franklin car. The steering mechanism has an automobile wheel and the throttle and spark control for the motor are the same as were used in the 1905 Franklin, from which the motor was taken.

Not only is the light machine propelled over the ice and roads at high speed by the large ten-foot blade propeller, but the canvas hood is so shaped that it catches the wind and helps to skim the light craft over the ice. Mr. Patterson has entered his motor sleigh in several races this winter.

## A NEW MODEL

A really distinctive type of motor car has been developed in the new C-Six Stevens-Duryea. This is something toward which automobile builders have been working, and it is not surprising that it originated from the factory which has developed many recognized mechanical improvements in American motor cars from the beginning, 22 years ago—the three-point support, the unit power plant, and the six-cylinder motor.

The new C-Six was designed from tread to top as a single piece of construction. That is to say, the chassis and body are blended into one, not only in appearance but in actual fact. The relations of each detail to the rest of the car were carefully weighed in making a design to give the utmost riding comfort and convenience.

The new body design, which applies for both open and closed cars, makes the hood an extension of the body instead of an adjunct of the chassis, and was planned as a part of the car, not as a seating compartment set on a frame.

The lines are sloping from the radiator to the windshield, which is also an integral part of the body, and from there flowing to the back of the car. The mudguards, which are the only projections on the side of the body, harmonize in shape and at the same time are specially effective.

An innovation in spring suspension changes the usual repeated bound into a single gentle dip, and prevents the car from lurching and swaying.

The mechanism of the car is a refinement of the standards

previously set by the Stevens-Duryea. It is as nearly noiseless as anything which moves can be. The all-over machining of working parts gives them perfect balance, which increases the smoothness of running and minimizes wear.

The six-cylinder engine has been enlarged to gain the additional power needed for the larger car, but a rearrangement of the valves makes it fit even a smaller space than the old type of engine required.

## PEORIA IMPLEMENT, VEHICLE AND HARDWARE CLUB CELEBRATES

R. D. Huntley was selected as president of the Peoria Implement, Vehicle and Hardware Club at the annual election and banquet held January 11 at the Creve Coeur Club.

Mr. Huntley is the general manager of the Peoria branch of the J. I. Case Threshing Machine Company.

Other officers chosen were O. T. Eads, assistant general manager of the Acme Harvesting Machine Co., first vice-president; L. G. Grunert, assistant sales manager of the Avery Co., second vice-president; L. N. Sibley, of the Peoria Drill and Seeder Co., secretary; H. R. Herschel, Jr., of the Herschel Manufacturing Co., treasurer; E. C. Heidrich, Jr., of the Peoria Cordage Co., chairman of the executive committee.

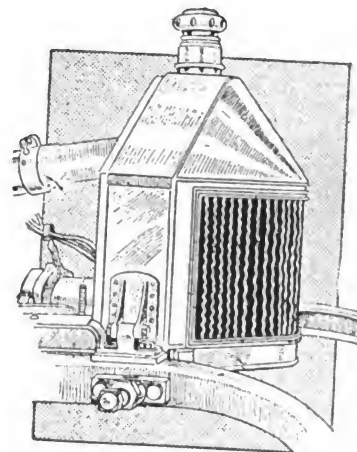
The annual banquet was a story-telling feast, the rule being adopted that any member present who would not be able to tell a story should be subject to a fine of one dollar. Two dollars were collected.

## POLISHES AND VARNISHES IN CHINA

The Chinese, when left alone, prefer their own stains, paints, and varnishes; when working under the supervision of foreigners, however, they use French polish, wax finish, and Ningpo varnish. On native work they prefer Ningpo varnish, oil, wax, and native stains.

Those stains are usually derived from woods and other vegetable substances by boiling. For example, the stain used to obtain "extra red" Canton matting and for other purposes is obtained by steeping Manila redwood for four hours. In staining the so-called "blackwood" furniture, for which South China and Canton in particular are famous, a similar coloring matter is used. Scraped, sand papered, and ready for the first coat the wood is pink, and upon the application of a varying number of coats of stain it is made to assume shades of red and brown until, with the seventh or eighth coat, the desired ebony hue is secured.

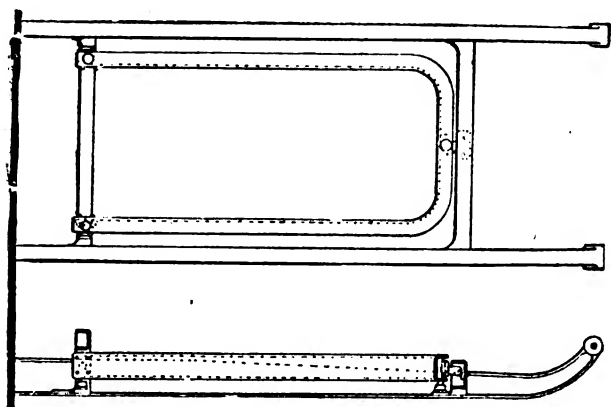
## TAPERED RADIATOR THE THING



The tapered radiator does away with the fan. This enhances the appearance of the complete vehicle, and strikes a distinctive note.

### TRUE THREE POINT SUSPENSION

True three-point suspension is employed for the engine and the gear box on the Peugeot racers. The subframe is a pressed steel member in the form of an elongated U. Independently, it has little transverse rigidity; it would almost be possible to bring the two ends of the frame together by muscular effort only. The necessary transverse rigidity is obtained by the fitting of the engine base and the gear box, these two organs always being fitted on the frame when this latter is out of the chassis. In other words, when it is necessary to dismount, the entire group—engine and gear box on its subframe—is



lifted out, the necessary work done, and the complete group put back again. It is this subframe which has three-point suspension to the main chassis members. At the front there is a trunnion attachment to a very strong double transverse frame member, and at each extremity of the subframe a ball-and-socket attachment, all three being provided with grease cups. With this design, whatever the twisting strains in the main frame members, the essential organs are unaffected. The value of the design is shown by the fact that it has not been necessary to provide a universal joint between engine and gear box, and that in all the racking work of training and racing, defects have failed to appear.

### THE FUTURE OF THE LIGHT AMERICAN CAR

The managing director of one of the largest American light car factories is reported to have recently expressed the opinion that five years hence the trade in their vehicles will be so far exhausted that the present proposal is, at that date, to "get out of it," returning all the share capital, plus a healthy dividend, and, metaphorically speaking, shaking hands all round in a felicitous farewell. Doubtless, such a proceeding is quite sound financially, especially if adequate notice of such intention were conveyed to the shareholders concerned, but it is doubtful whether a programme quite so cold-blooded and negative would meet with absolute enthusiasm in this country. However, there can be no two opinions about its being preferred to a composition of "something in the £," although it certainly seems to lack that robust and progressive element with which we are accustomed to connect the financial schemes of our American cousins. Still, rumor is generally a lying jade, and the above report is possibly but a further example.—Motor (London).

### AMERICAN ENGINEERS TO VISIT GERMANY

Arrangements have been made for the American Society of Mechanical Engineers to hold a joint meeting with the Verein Deutscher-Ingenieure in Germany during the coming summer. The American visitors will arrive in Hamburg on June 21 by the Victoria-Luise, and after inspecting the shipyards will proceed to Leipzig. There addresses will be given on general subjects, such as the history of engineering, the relations of

capital and labor, and the effect of technical education on industry. On the following day technical papers will be discussed. The party will then start on a tour, visiting such places as Dresden, Berlin, Dusseldorf, Cologne, Frankfurt-on-the-Main, Nurnberg, and Munich. It is expected that the Krupp works at Essen will be opened for their inspection.

### SOFT METALS IN CHASSIS CONSTRUCTION

There are still many designers who maintain that aluminum is unsuited for use on heavy chassis, and many attempts have been made, from time to time, to produce alloys which will overcome the defects of aluminum while retaining the advantages of this metal. After long research work, and considerable commercial experience, National Alloys, Ltd., England, has produced at a commercial price, a metal which it calls "Ivanium," and this is being used in large quantities for the above mentioned purposes. The metal is  $2\frac{1}{2}$  per cent. heavier than pure aluminum, and it possesses many desirable advantages. Its tensile strength (cast) is 11.1 tons per square inch; it casts cleanly and easily; it is non-magnetic, tough and non-porous, and it can be easily filed and machined.

### WHERE FRENCH AND ENGLISH TENDENCIES DIFFER

While the general tendency is practically the same in France as in England, there are a few details in which the former school differs from the latter. Worm drive, in which England set the fashion two or three years ago, has only just begun to appeal to the French maker. If Olympia statistics are of any value, the popularity of the worm-driven rear axle is on the wane, for while some very important firms are adhering to this type of final drive, the total number preferring it to bevel gears is smaller than a year ago. This is doubtless not due to any defect in the worm.

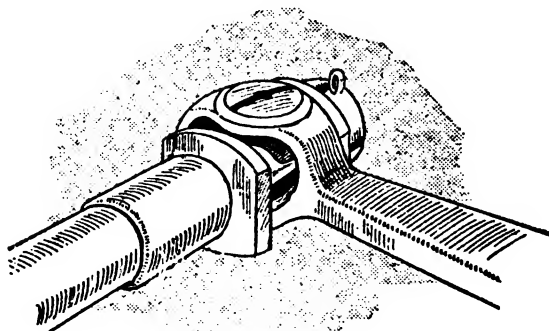
### WOOD SHOP HINT

A tiny splinter in the flesh has a frightful way of hurting one's feelings, and it is so elusive when one "fishes" for it, that the following simple method of getting rid of one ought to be "learned by heart."

Take an ordinary steel pen, press it down on the flesh, push it with opened points toward the splinter. When you touch the splinter allow the points of the pen to close, and pull the splinter out.

### IMPROVEMENT IN STEERING GEAR

A steering gear has been designed so that, in the rare event of a steering pin breaking, the joint is prevented from separa-



ting, a strong collar being formed on the rod behind the closed jaw on the steering arm, while another collar is secured at the end of the rod. If a pin went the joint would merely feel very slack, so that ample warning would be given to the driver.

## ELEPHANT AND CASTLE HORSE MARKET

Within a stone's throw of that famous hostelry south of the Thames in London—the "Elephant and Castle"—stands the well known horse repository known by the same name. It is easily distinguishable from among the adjacent buildings by reason of the life-size gilded model of a horse which surmounts the parapet. In point of years this particular mart cannot claim to look back so far as some of the other repositories of the metropolis, but it has been in existence for over half a century, which entitles it to be regarded as an old established institution. Although it cannot boast of being especially notable as far as age is concerned, the place it occupies among London repositories is none the less prominent; it can claim, indeed, that some of the largest sales of horses in London are held within its walls, while in another respect, to which reference will be made later, it stands unique among establishments of its kind. To this flourishing state it has been brought in the course of the past twenty years or so, while it has been conducted by its present proprietors, the London Horse and Carriage Repository, Ltd., into whose hands it came after it had been run by a succession of several different owners.

The class of horses that are disposed of at the Elephant and Castle repository on the usual sale days—Mondays and Thursdays—consist for the most part of those very serviceable animals employed by contractors, tradesmen, and so on—massive cart horses of the Shire and Clydesdale breeds, van horses, harness horses, colts, and such like useful and ubiquitous types. Some hundreds of these, together with their harness and other equipment pertaining to them, often come under the hammer in one day, and sometimes a consignment from one employer of horses alone comprises a very large number. On these occasions many of the best buyers from all parts of the country on the lookout for animals of the character they need, foregather under the arched glass roof of the repository.

In the description so far given of this horse mart only part of the trade transacted by the firm who conduct it, and which presents no features of unusual interest, has been covered. The remaining portion is of a nature quite out of the ordinary; it consists of quarterly sales of the stock of funeral carriage proprietors—horses, hearses, harness, and much of the paraphernalia indispensable to the obsequies of persons both rich and poor. In this respect the Elephant and Castle stands alone among other repositories not only in London but in the United Kingdom. Occasional sales of such a character may take place at other establishments, but only at the one in question are the sales held regularly once a quarter, and only there do they reach such large proportions. It is, in fact, the recognized center for the buying and selling of such stock. On the days when the sales take place the repository presents an interesting appearance. An auction of ordinary horses is prosaic and monotonous beside the scene at the Elephant and Castle mart when its spacious interior is given over to the disposal of the handsome black carriage horses familiarly associated with funeral processions. Around the rostrum are gathered many members of the "profession" from all parts of England, Scotland, Wales, Ireland, and the Continent, together with job-masters from all parts who make a practice of hiring out black horses for this purpose. There is little to indicate the nature of the occupation of the persons assembled here. Anyone with a strongly developed imagination might conceive an air of sombreness and gloom to overshadow the proceedings, but, for the nonce, the undertakers and their "sable steeds," the hearses and the other funeral effects are in a different atmosphere. Many of the horses that find their way to these sales are old stagers at this kind of work, but others have only just been imported from Holland or Belgium and have yet to take their place between the shafts of a hearse or mourning carriage. The horses used by funeral carriage proprietors are known as black Belgians, being generally bred in that country or in Holland for this purpose exclusively. They invariably realize good prices at the sales.

## MOVEMENT FOR IMPROVED HIGHWAYS

Many of the model highway laws in various states have been prepared under the advice of the road experts of the Department of Agriculture and all the data and statistics of the Office of Public Roads are at the disposal of the legislatures.

In the last bulletin of the Office of Public Roads it was stated that at the close of 1909, 8.66 per cent. of the roads in the United States were improved. This represents a gain in the total road mileage improved for the five-year period, 1904-1909, of 1.52 per cent., or, in other words, the percentage of improved roads has increased during this period from 7.14 to 8.66 per cent.

In the three years that have elapsed since then, it is roughly estimated that the percentage of improved roads has gone well beyond 9 per cent. and possibly close to 10 per cent. It is estimated that if 20 per cent. of the public highways were improved—each highway being selected and improved with a view to the proportionate traffic upon it—a high degree of efficiency in highway transportation would be reached. It is figured that millions of dollars would be saved annually in the transportation of crops, the wear and tear on horses and vehicles, and in the minimizing of the waste in truck farming. Where roads are bad, the farmers frequently find it impossible to get their products to the shipping points and thus perishable products are wasted, perceptibly increasing the cost of living.

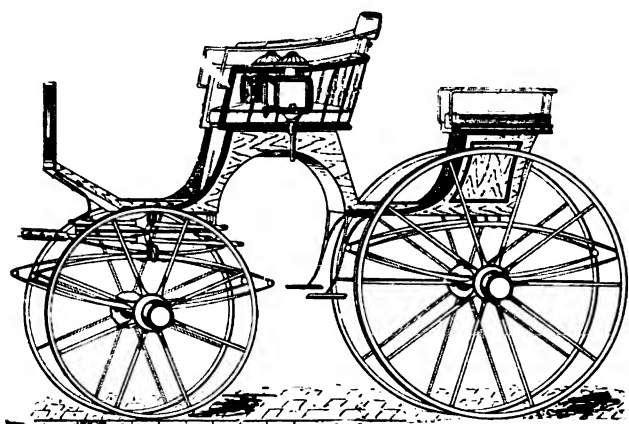
In the five years preceding March, 1912, the Office of Public Roads of the Department of Agriculture has built 215 object-lesson roads; in all, about 300 miles of road 15 feet wide, and by expert advice aided in the formulation of more than 650 model county road systems, resulting in most instances in beneficial reforms. It has also assisted 26 states in effecting equitable state-aid plans. The secretary looks forward to the coming year as promising better results than at any time in the history of the movement for improved highways.

## INVENTS A RIM GAUGE

The Goodyear Tire and Rubber Co. has invented a rim gauge through L. A. Falor, of the motorcycle tire department, and is supplying the trade on application. With this gauge the dealer can tell in a moment the most suitable-sized tire for any given rim. One simply inserts into the rim the correct gauge length and reads on the proper section of the gauge the exact size to be used. The tire size is printed boldly on the section fitting the rim.

## NEW PRESIDENT OF MARTIN CARRIAGE CO.

Peter A. Elsesser has been chosen to succeed the late M. D. Martin as president of the Martin Carriage Company, at York, Pa. He was connected with the company for 21 years, having served as secretary and treasurer during the past seven years. John J. Landes was elected treasurer.



# Trade News From Near and Far

## BUSINESS CHANGES

Caulk Bros. have succeeded to the business of Cox & Caulk, in Binger, Okla.

E. F. Morris has sold out his stock of vehicles in Hartington, Neb., to H. Sorenson.

David Cook & Son have disposed of their vehicle business in Blue Springs, Neb.

Klein & Armitage have succeeded Klein Bros. in the vehicle business in Burt, N. D.

Pryor & Jaszkwak have purchased the business of E. W. Cullen, in Windside, Neb.

E. O. Scott has purchased the stock of vehicles, etc., of Fain & Rickerd, in Burns, Kas.

Fred Klumper has purchased an interest in the Isaac Van Dyke Co., in Zeeland, Mich.

C. A. Griffin has purchased the vehicle business of Harry Alumbaugh, in Carlisle, Ind.

Thompson & Son have purchased the stock of vehicles of D. W. Hall, in Woodward, Ia.

Charles Peck has purchased the stock of vehicles, etc., of Sterns & Son, in Morrill, Kas.

Burt Harris has purchased the stock of vehicles, etc., of Boatman Bros., in Barnes City, Ia.

John Hawkinson has purchased the stock of vehicles, etc., of Ed. Patterson, in Clyde, Kas.

Eberle & Lauer have purchased the vehicle business of M. Reinhardt's Sons, in Lincoln, Ill.

S. L. Reid has purchased the stock of vehicles, etc., of Kirchner & Cordts, in Carbondale, Kas.

Hammersly & Ireland have purchased the stock of vehicles of Welch & Robbins, in Puente, Cal.

Hiram R. Howell has purchased the stock of vehicles, etc., of Squire Bros., in Millington, Mich.

Roach & Knight have purchased the stock of buggies, etc., of H. B. Swedlund, in Fleming, Colo.

Dean W. Perdue succeeds Perdue & Gunby in the carriage and harness business at Salisbury, Md.

Moe Bros., of Baldwin, Wis., have been succeeded in the vehicle business by Bliesner & Larson.

The Michigan Automobile Co., of Kalamazoo, Mich., has been succeeded by the Fuller & Son Co.

G. L. Burson has disposed of his carriage business in DeQueen, Ark., to the Hayes Hardware Co.

Buening Bros. have purchased the stock of vehicles and implements of Fred Stralow, in Hope, Kas.

Bert Garrison has been succeeded in the vehicle business in Guide Rock, Neb., by Montgomery & Power.

Ed. Unckless has been succeeded in the carriage and implement business in Friend, Neb., by Al. Gallup.

Brady & Rodgers have been succeeded in the vehicle business in Marysville, Kas., by J. H. Cavanaugh.

G. W. Meadows has disposed of his vehicle and implement business in Walt Hill, Neb., to Snyder & Watson.

Geo. W. Kemp has disposed of his vehicle and implement business in LaMonte, Mo., to J. M. Burrow & Son.

P. B. Ibech, of Newkirk, Okla., has purchased the stock of vehicles, etc., of Thos. Daniels, Jr., in Douglas, Kas.

J. J. Lilley has discontinued his vehicle business in May Day, Kas., and has gone south for the benefit of his health.

Chas. Schmelzer and son Homer, have purchased the buggy and wagon shop of Thos. G. Fletcher, at Richwood, O.

J. E. Hutchinson has purchased the stock of vehicles and implements of E. J. McNaughton, in Middleville, Mich.

Art Boettcher has sold out his carriage business at Mendota, Ill., to Sunday & Faber, and will be in their employ hereafter.

Alexander & Wilson have purchased the business of the Burlington Buggy Co., in Burlington, Ia., and will add automobiles.

Brown Bros., carriage manufacturers at Bristol, Va., will liquidate and wind up the business. Assets are scheduled at \$31,000, with liabilities of \$18,000. •

S. W. Kreuger and Sam Kubly have purchased the Buri wagon works at Monroe, Wis., of Carl Goecks, who recently took over the property in satisfaction of a mortgage.

## NEW FIRMS AND INCORPORATIONS

Ferdinand Miller has opened a stock of vehicles, etc., in Palmer, Neb.

R. L. Moses has just engaged in the vehicle business in Peculiar, Mo.

E. W. Lundy is just opening a new stock of vehicles, etc., in Durant, Ia.

Lambert Schrader has just opened a new stock of buggies in Clay Center, Neb.

H. J. Henrickson is about to open a new stock of buggies, etc., in Cordova, Neb.

S. O. Spence is about to engage in the vehicle and implement business in Madrid, Ia.

Wheeler & Co., grocers at Galveston, Tex., have added a line of buggies and wagons.

McCord & Ritten have engaged in the vehicle and implement business in Ainsworth, Neb.

C. P. Swanson, of Velva, N. D., is about to engage in the vehicle business in Minot, N. D.

Anderson & Krautkemmer have engaged in the vehicle and implement business in Mankato, Minn.

Sorenson C. Sorenson has just engaged in the vehicle and implement business in Fairmont, Neb.

A new farm implement and buggy business has been opened at Freeport, Ill., by Younglove & Steward, at 108 Exchange St.

Roderick Buggy & Implement Co. has been incorporated at Hannibal, Mo., with a capital of \$25,000, by S. F. Roderick, H. S. Elzes, F. M. Head.

The Geo. Bohon Co., of Harrodsburg, Ky., will engage in the buggy business at Springfield, Ky. Mr. H. K. Curtsinger will have charge of the business.

The Elite Wagon Co., of Queensborough, Greater New York, has been incorporated with a capital of \$5,000, by Samuel A. Hartgensis, Leo Loeb and Ralph S. Hartgensis.

The Charlotte (N. C.) Wagon & Auto Co. has been organized to manufacture express and delivery wagons and automobile tops. J. L. Owens is president; J. F. Owens, secretary, and Thomas P. Moore, vice-president and treasurer.

## IMPROVEMENTS AND EXTENSIONS

Palmer Bros., of Morristown, S. D., are erecting a new vehicle repository.

C. A. Merriam, a vehicle dealer of Oxford, Mich., has begun the erection of a new store building.

The Welsh (La.) Carriage & Implement Co. is putting up an addition as the company is badly in need of room.

The Michigan Hearse & Carriage Co., Grand Rapids, Mich., has increased its capital from \$30,000 to \$45,000, to provide funds for the building of a large addition to the plant.

The Peabody Buggy Co. has purchased the plant of the old Fostoria (O.) underwear factory and it is announced that

it will be used as a factory for the manufacture of an auto under the name of the Allen Motor Car Co.

The Mandt Wagon Co., Stoughton, Wis., will build an addition to its paintshop. It will be 100 feet in length and will double the capacity to that department. The new building will connect the old paint shop with the shipping warehouse.

Plans have been filed in New York City for the construction of a four-story wagon shop on the north side of Fifty-sixth street, 100 feet west of Eleventh avenue, for John Theurer. It will have a frontage of 100 feet and a depth of 55.11 feet, be of brick and will be fireproof. The cost has been estimated at \$45,000.

The Mann-Aldrich Carriage Co., Denver, Colo., has just become installed in its magnificent new factory building recently completed at Thirteenth avenue and Lincoln street. It is three stories in height, of brick construction. All the work rooms are equipped with light from large plate glass windows on each side of the building.

The Fremont (Neb.) Carriage Company's plant was put out of commission for six months during the past year by a disastrous fire which gutted the building. The work of reconstruction was begun as soon as the debris could be cleared away. The interior arrangement was changed materially. There is now a show room 44x100 feet, with the office in the rear. The assembling room is in the rear with a more commodious paint shop above. The elevator capacity was increased so that the largest vehicle or automobile can be handled. The company has warerooms at several points in the west, from which places all the summer business is handled. This concern makes a specialty of mountain country rigs.

### NEW AUTOMOBILE INCORPORATIONS

The Standard Auto Co. has been incorporated in Louisville, Ky., with a capital of \$10,000.

The Maxton Auto Co. has been incorporated in Maxton, N. C., with a capital stock of \$50,000.

The Hanna Motor Mfg. Co. has been incorporated in Kansas City, Mo., with a capital stock of \$60,000.

G. C. Tippins is organizing a company in Galveston, Texas, with a capital of \$100,000, to make automobiles.

The Van-Winkle-Morton Truck Co. has been incorporated in Atlanta, Ga., with a capital of \$50,000, to make motor trucks.

The Maumee Motor Car Company has been incorporated at Toledo, Ohio, to manufacture and deal in automobiles, motor cycles, gas engines and their accessories, capital \$10,000, by Richard D. Logan, A. J. Gallagher, H. E. Frankenberger, Adolph E. Burien and E. A. Koster.

Walkerville, Canada, is to have a new automobile manufacturing plant. Plans are now being made for a two-story factory, covering 42,000 square feet, for the Tate Electric, Ltd., a motor car company organized by Toronto and Montreal capitalists, to build electric pleasure and commercial cars.

### FIRES

The stock of buggies, etc., of H. E. Weaver, in Superior, Ia., has been burned.

The George Persinger stock of vehicles, etc., in Oak, Neb., has been destroyed by fire.

Consolidated Wagon & Machine Co., St. Anthony, Idaho, suffered a loss by fire of \$100,000.

### NEW "HUDSON" CONTRACTORS

E. V. Stratton Company, of Albany, N. Y., has secured the Hudson contract and will distribute the Hudson cars in several counties in the Albany section, in addition to territory in Massachusetts and Vermont. Several dealers have already been appointed.

### PERSONAL

Frank E. Swift, president of the Eagle Wagon Works, Auburn, N. Y., has been elected president of the Auburn National Bank.

Charles A. Trask has resigned as factory manager of the Henderson Motor Car Co., and has been succeeded by J. M. Smith, formerly factory manager of the Cole Motor Car Co., of Indianapolis, Ind.

Announcement is made of the approaching marriage of Otis W. Mansur, secretary of the Velie Carriage Company, to Miss Florence Kerns, member of an old Moline family, the event to occur on February 12.

Mr. Frank P. Stone, of Chicago, who was in The Hub office for a little visit, says the automobile wheel is a mere pulley, not a wheel at all. Mr. Stone's ideas are always interesting and sometimes very original in thought.

G. H. Carver, manager of the Mandt Wagon Co., at Stoughton, Wis., has been transferred as general manager of the Adriance, Platt & Co. binder factory at Poughkeepsie, N. Y. He will be succeeded at the Mandt Wagon Co. by his assistant, S. T. McDonald.

J. A. Hosmer, president of the Hawkeye Buggy and Implement Co., gave a banquet the evening of January 14 at the Grant Club to the office force and salesmen in his employ, in honor of C. S. Denny, who has been with the Hawkeye Buggy and Implement Co. and the Hawkeye Transfer Co. for the past twelve years. He has tendered his resignation, to take effect January 15, to become a special salesman for the Des Moines Silo Co.

Mr. Albert Fehling, Fehling Brothers, Buenos Aires, was recently in this country again. He paid The Hub the courtesy of a visit. Mr. Fehling's accounts of coach building in the big South American city were most interesting. The various woods of the country used for framing, wheels, hubs, etc., were quite a departure from some old-time notions. Prices of coaches, landaus, and such high grade heavy work are about the same as with us, differences in money being taken into account. Mr. Fehling is agent for the Cadillac, of which he sells a number. His account of the fruitless efforts he makes to have the makers conform to conditions of the market in details were very curious, and one more illustration of the set, almost hide-bound practice of the American maker to do things his way, no matter what. The contrast between this and the actions of the European makers seeking the same market are such as we repeatedly read about in the Consular reports. Some of the objections Mr. Fehling itemized seemed to us to display a gross lack of business sense on the part of the Cadillac people. Mr. Fehling learned his automobile lesson in this country in Indianapolis, where he remained quite a time to get into the practical details of the work of construction. He is in favor of giving the American car a big chance in his country, and only asks a little intelligent co-operation.

### BOSTON CARRIAGE MAKERS ELECT OFFICERS

The Carriage Manufacturers' Association, of Boston, held its annual meeting at the Revere House the evening of January 6 and elected the following named officers: M. W. Quinlan, Jr., president; Willis R. Russ, vice-president; William P. Stone, treasurer, and Albert E. Taylor, secretary. On the executive committee are Robert E. Harrison, Albert A. Sargent, Abbott L. Hatch, Charles Van Buskirk, Frank A. Teeling, James A. Kiley and Galen M. Bowditch. The association held its annual dinner at the hotel on January 22.



## OBITUARY

**John Riddle**, member of the old carriage building firm of Riddle Brothers, died at his home in Dorchester, Mass.

**E. H. Rogers**, 93, the oldest resident of Montrose, Pa., died January 11. Mr. Rogers was a life long resident of Montrose and in his earlier days was one of the famous wagon makers of the country.

**Henry Smith**, for many years a carriage maker at Sycamore, O., died January 15 at Carey, at the age of 62 years. A widow and one son survive.

**W. O. Brown**, a prominent buggy manufacturer of Dallas, died at the home of his father, Capt. John S. Brown, at Cleburne, Texas, January 18. He was reared at Cleburne and moved to Dallas some years ago.

**Latting Carpenter Ketcham**, 82 years old, died at his home in Flushing, L. I., January 21. Mr. Ketcham was a wagon builder and had factories in New York City and Great Neck. He leaves his wife, one son and a daughter.

**Frank Horn**, pioneer Detroit wagon maker, died January 13, at his home, 383 Michigan avenue, where he had resided for 60 years. He retired from business 20 years ago. He is survived by the widow, a son and three daughters.

**Daniel Sheahon**, 85 years old, died January 9, of heart disease at the home of his son-in-law in St. Louis, Mo. Mr. Sheahon located in St. Louis about fifty years ago and engaged in the manufacture of wagons until several years ago. He is survived by three daughters.

**Philip W. Schildwachter**, secretary of the Schildwachter Carriage Co., Park avenue and 128th street, died January 18, of nervous prostration at his home in Bronxville, N. Y. He was 58 years old. Mr. Schildwachter was interested in trotting horses and was the inventor of the 58 pound wagon for trotting horses. He left a widow.

**David D. Ackerman**, 65, died January 9, at his home in Syracuse, N. Y. He had been ill for six weeks of paralysis. He was born in Germany and moved to Syracuse many years ago. He conducted a wagon making business and did most of the repair work on the Fire Department and other city department wagons. Besides his widow he leaves two sons and five daughters.

**August H. Baumbach**, proprietor of an automobile repairing and wagon building establishment in Washington, D. C., is dead, after an illness of about four months. Mr. Baumbach was 29 years old. At the death of his father two years ago he succeeded as the head of the business which was established a number of years ago. He is survived by his wife and one child.

**Gottlieb Kroll**, known throughout the country as a pioneer carriage builder, died January 6 at the home of his son-in-law, William J. Wray, of 917 North 29th street, Philadelphia. Mr. Kroll was 92 years old. He bore the distinction of having built in the city the catafalque for the funeral services for President Lincoln within three days. He also designed the landau that President McKinley used in the dedication services at the peace monument.

### SALE OF THE FITZGIBBON & CRISP PLANT

The wagon and automobile plant of Fitzgibbon & Crisp, at Trenton, N. J., was purchased January 14 at public receiver's sale by Barker Gummere, treasurer of the Trenton Trust and Safe Deposit Co. The purchased property includes land, buildings, machinery, stock, fixtures, work finished and unfinished, and all the personal property except book accounts.

A company has been organized to be known as Fitzgibbon & Crisp, Inc., by L. L. Woodward, W. F. Smith and J. Williams.

### WHERE BOSCH MAGNETO WAS BORN

The birthplace of the magneto is Stuttgart, or the "Horse Garden," if we Anglicize the name of the town. Here, 25 years ago, Robert Bosch, who some years before had extended his knowledge in a London electrical shop, founded his business and eventually evolved what all the world knows today as the Bosch magneto. It was in Stuttgart that the internal combustion engine was first applied for road traction purposes by Herr Gottlieb Daimler, whose name is a household word throughout the motor world. It was at Herr Daimler's request that Herr Bosch first made a magneto. Motor cars had been struggling till its arrival with faithless accumulators and more fickle tubes, and it is not too much to say that at least 90 per cent. of the troubles of the early pioneer disappeared with the advent of the Bosch magneto. What the present prosperity of the motor industry owes to the Stuttgart invention can only be conjectured. It has turned motoring from an adventure into a matter of fact. It has raised the internal combustion engine to an instrument of commercial preeminence, both as regards efficiency and speed. In a word, it has helped to revolutionize the age. From the humble beginning of 25 years ago Robert Bosch is now the biggest employer of labor in Stuttgart, approximately 6,000 operatives being on his labor roll, and shortly this number will be increased to over 7,000! Think of it!

### OMAHA IMPLEMENT AND VEHICLE CLUB ELECTS OFFICERS

At the annual election of the Omaha Implement and Vehicle Club, held in January, these officers for 1913 were elected: President, R. L. Robinson; first vice-president, W. J. Plant; second vice-president, W. F. Norman; secretary, Edward Aitchison; treasurer, W. E. Cox; directors, G. M. Durkee, Henry E. Johnson, G. N. Hypse, H. E. Daniels and B. G. King.

A pleasing incident of the meeting was the presentation of a magnificent gold watch to the retiring president, W. R. Lumry, who has served two terms, and been an active worker in the organization. Mr. Lumry, who was assistant manager of the Parlin & Orendorff Plow Company, left the city last June to become general manager of the plant and business of the Associated Manufacturers Company, at Waterloo, Ia., but he kept up his club activities in Omaha, going back to attend the monthly meetings.

The club consists of the implement and vehicle jobbers and manufacturers' agents of Omaha and Council Bluffs.

## Wants

Help and situation wanted advertisements, one cent a word; all other advertisements in this department, 5 cents a word; Initials and figures count as words. Minimum price, 30 cents for each advertisement.


### PATENTS.

**Patents**—H. W. T. Jenner, patent attorney and mechanical expert, 608 F St., Washington, D. C. Established 1883. I make a free examination and report if a patent can be had and exactly what it will cost. Send for circular.

### MALE HELP WANTED

**Wanted**—One first class carriage blacksmith for pressing and punching department to take charge of room. We want a hustler and one who can handle men. Give us full particulars as to age and experience in first letter. All replies strictly confidential. Douglas & Lomason Co., Detroit, Mich.

**Wanted**—Good all round auto and carriage trimmer, first class trimmer for custom work. Please state experience. D. Heye, 111 W. Commerce St., San Antonio, Texas.



**LET'S  
TALK ABOUT  
WELTS AND GIMPS**

AND A FEW OTHER  
GOOD THINGS WE HAVE  
SUCH AS SHAFT AND AUTO STRAPS  
PROP BLOCKS (Wire Wrapped)  
CUT LEATHER (All Grades)  
RIGHT PRICES

**BACKSTAY MACHINE  
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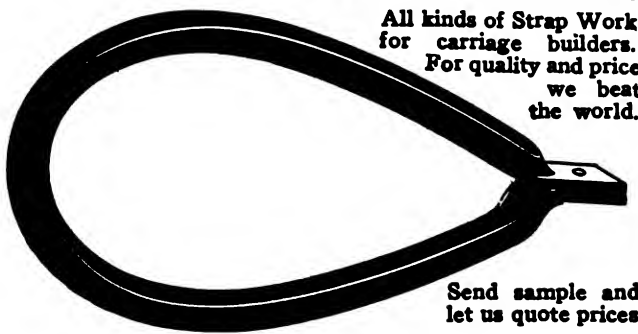
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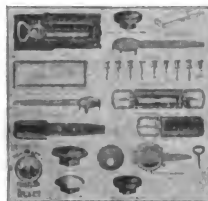
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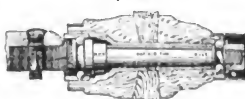
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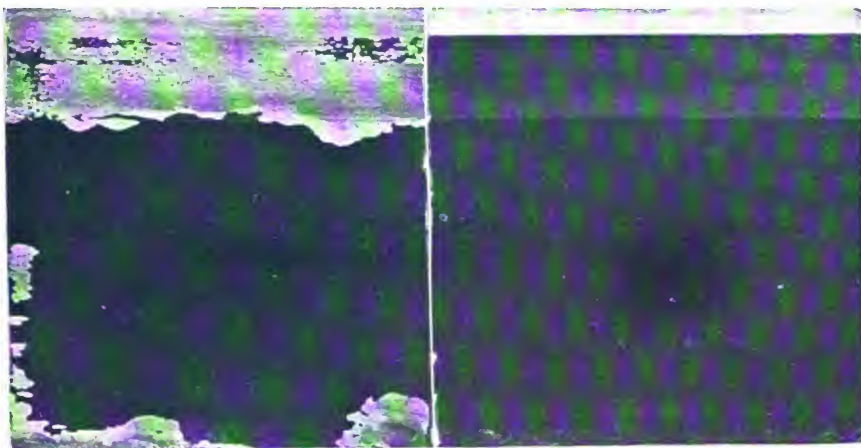
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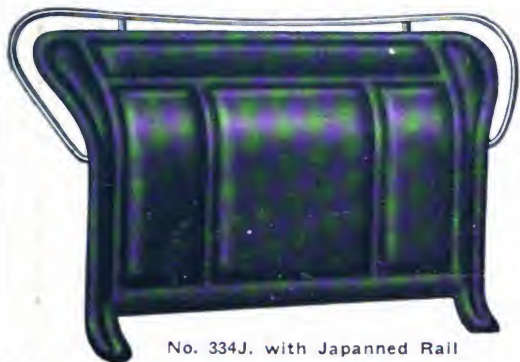
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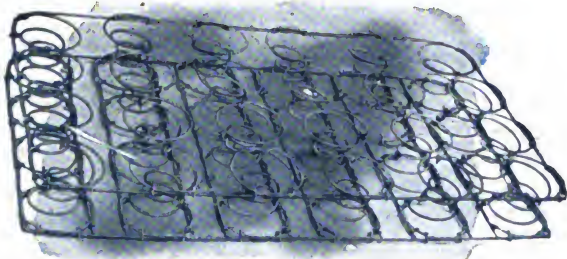
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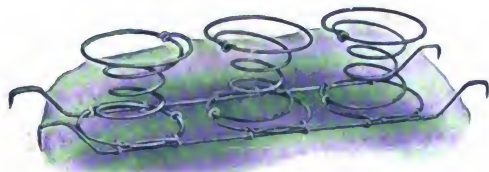
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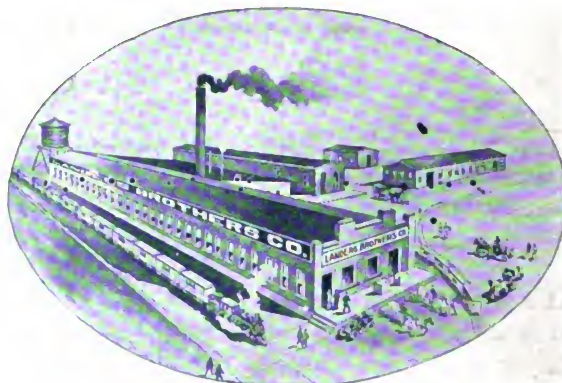


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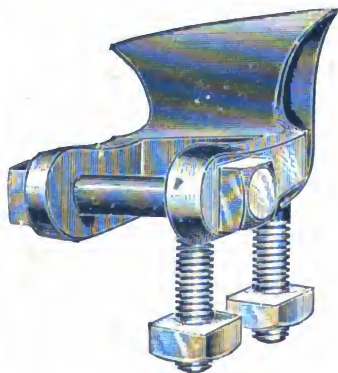
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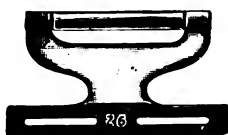
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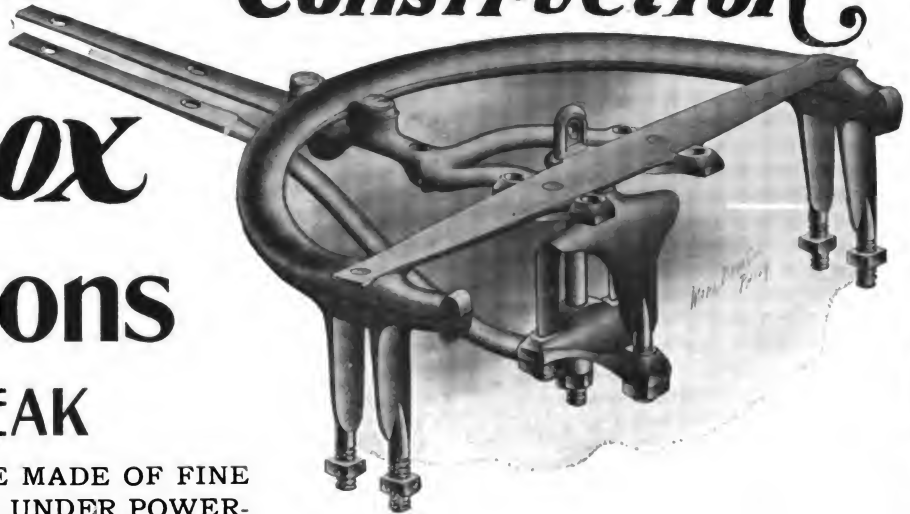
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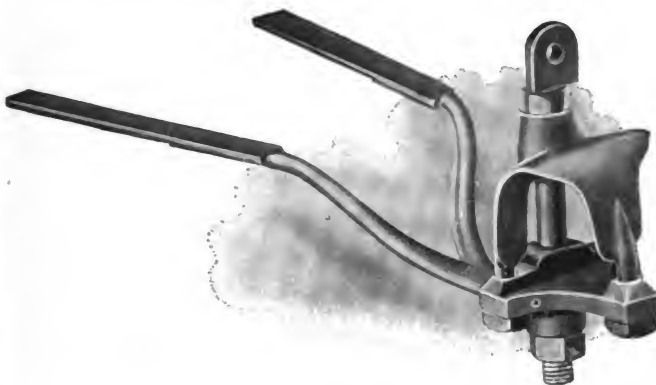
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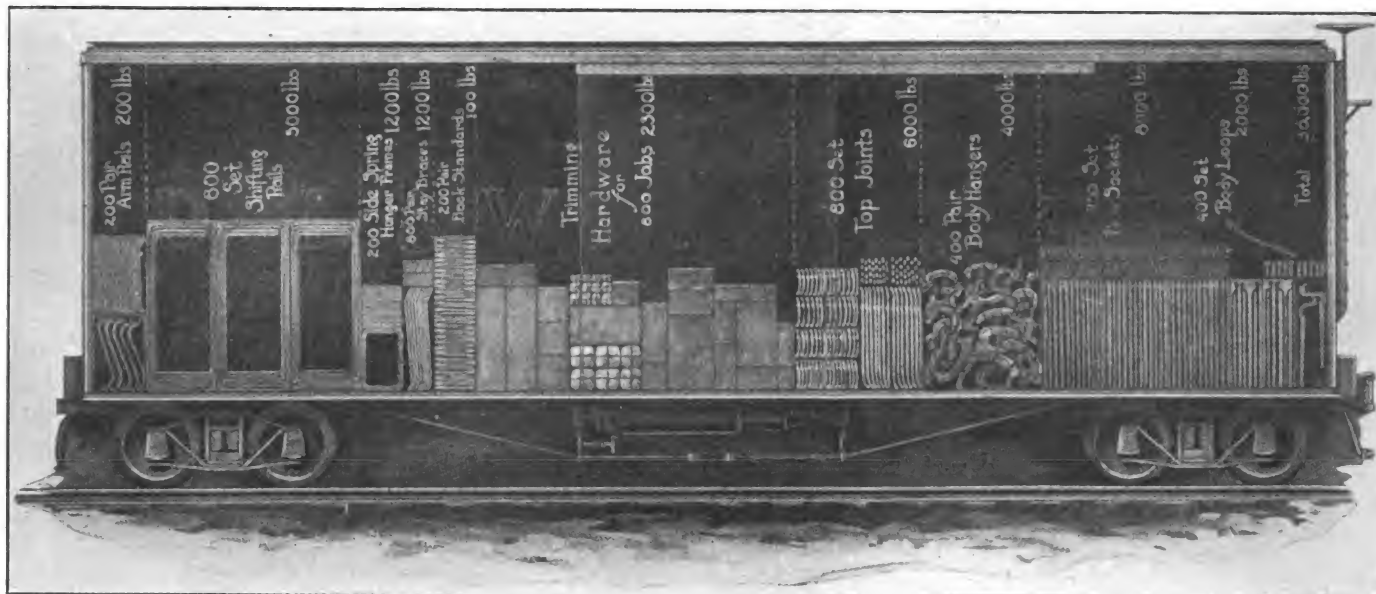
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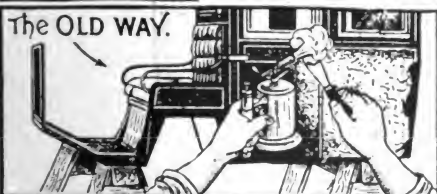
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FRANCE.—L. Dupont, publisher of *Le Guide des Carrossiers*, 78 Rue Boissiere, Paris. Subscription price, 15 francs, postpaid.

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## Show Ideas

The automobile shows, pleasure and commercial, were very interesting.

The pleasure car effort was distinguished by the almost universal presence of the self-starter. The preference seemed to favor the electric brand of the article. There are several that do whatever is asked of them—in shows.

It is very interesting to note how quickly a new idea develops in the motor car business. Its competitive character meets every supposed public desire with wonderful alacrity. The crank is almost in the dodo period, yet two years ago it was ever present. Such quick responses to sales conditions make for continual improvement.

The refinement of the motor goes on apace. How pretty it looks to the beholder in the show, how otherwise after a good amount of gruelling work.

The sleeve valve type has not done more than edge a place for itself on the bench, so far.

The T-head cylinder and poppet valve is still regnant. Probably a maker does hate to pay a license, or make cost-compelling changes in machinery installation if the goods can be marketed along usual lines.

We think the era of more simplification in engine construction is not far away, but like the self-starter, it will need an impulse that has not yet come to the front, but we make headway swiftly, once set agoing.

The body of the vehicle has fallen into the conventional state. The differences are mere modification of sweep of line and cost. A tendency to all metallic construction, even to the roofs of inclosed bodies seems to be fashionable. If the machine should turn turtle it would present a very dented and battered aspect. We believe more wood construction would stand such an accident better. But they do look sweet, and take the paint, or enamel and varnish so brilliantly.

Trimnings and spare seats have been given much thought and attention. Sometimes the intention goes wrong in the matter of placing the spare seat when viewed from the practical utility point, but the discomfort of those who have to occupy them may in time be made manifest by still more improvement. The spare seater is most often an invited guest, and the observation of such an one is summed up in Just Lovely! no matter how the small of the back may silently protest. The mouth of a gift horse is never looked at critically, for instance, save when the back of the donor is turned and he is out of ear shot.

The striking thing is the value in car given for the price. It is pretty safe to say automobiles are now on the bargain counter. All "extras" are now included in the "regular equipment," so that a buyer seldom has to go down into his jeans for more money for desirable trifles, as in former years.

The next important advance ought to be simplification of parts. Probably it will be. Today the most outstanding make of car in this regard is by all odds the "best seller," so we look for improvements originating in this quarter.

A good deal can be done in the matter of weight of car. It does not seem reasonable, as at present, to have so much tonnage to transport so small a quantity of live weight. Something could be done here; no doubt it will be.

The air-cooled motor does not advance as it should. The serious inconvenience and weight of water is a handicap that can be overcome, because it has been, and an impulse along the line, once started, may cause changes as quickly as the introduction of a self-starter.

But the pleasure automobile is a fine mixture of machinery and vehicle today.

### **The Commercial Car**

The interest is shifting to the workaday vehicle. It is in the transformation period. Those who saw immediate profit just put a wagon body on a pleasure car chassis and rechristened it. Others gave the problem more thought and evolved better results.

The introduction of the helical gear may prove the undoing of the chain drive. The chain is a very noisy member, and can become very inefficient under given conditions. Such conditions only develop long after the sale is made. Hydraulic transmission is also to be counted with. This is a very fine application of power economically, and is simplicity itself so far as control goes. Even the non-instructed could handle such a truck, and that individual is the one to be reckoned with. There was an example of such a truck that seemed to fill the bill.

Quite an advanced idea is the tractor, of which there were several examples. This idea is true efficiency, as well as economy. The tractor is geared to the wagon body, making any wagon body effective. In one example but one guide wheel of the tractor was rubber-tired. The weight-carrying body traveled on its own steel-tired wheels. The tractor is very flexible, short turning, and altogether fills a want. No doubt more will come to the front in time. It is just like hitching horses to the wagon. The saving in the tire bill would be something very great.

The enormous bulk of some of the body conveyors is something to wonder over. The loads moved by these vehicles surely are significant, especially if the load does not get "stuck" or stalled, so many instances of which are seen in the streets.

The light delivery wagon is multitudinous in number, form and feature. It seems as if every condition of service must have something to fill the bill.

The air-cooled, high-wheel wagon is one that makes a pleasing record for long continued work where tried out. There should be more such. Friction transmission is liked on the cheap small wagons. Some of the work looks as much too flimsy as other looks too heavy. The impression received is one marking a transition stage—not the real thing that the future has in store to develop in its own time and place.

The art of the assembler was strikingly shown in a commercial that boldly proclaimed it was made of the proved best that could be found in the trade. No mistakes, nothing but the proved best wherever it could be bought. We believe that kind of truck is the car of the future. The parts maker has the ability to put it all over the one who tries to make everything under one roof.

Fire, ambulance and hospital apparatus was most interesting. Speed, flexibility, efficiency seemed to be painted in letters of gold on the side panels.

All in all, this wonderful trade development in the art of transportation is striking, and always carries the interest of the beholder more closely than the best novel. Just observe the attendance for proof of it.

### **In England**

The latest is the report that the government is to consider the kind of body that must be used on motor carriages.

Those that inclose the driver are not thought to be safe, we gather, and cars so built may be refused a license.

There is a great amount of regulation time present going on everywhere. Every move tends to the control of some central authority. Presently we will be ruled by rules applicable to every kind and condition of life. The man hired to govern is very much on the job.

### **Price Advance Proposed**

Little while ago the buggy builders, a lot of them, met in Chicago and affirmed that due to the cost of their raw material the price of buggies must surely be put higher.

They have been saying this for three years at least whenever the chance offered. We have never heard any one dissent. Why don't they talk less and do more?

### **CINCINNATI CARRIAGE MAKERS' MEETING**

The February meeting of the Cincinnati Carriage Makers' Club was held at the Sinton Hotel, a large number being present. Following the dinner, the regular business routine was disposed of, Vice-president Taylor in the chair. Resignations were received from C. C. Evans, of the F. A. Ames Co., Owensboro, Ky., and Mat L. Sullivan, of the O'Bannon Corporation, New York City.

A letter was received from Mrs. A. T. A. Nelson thanking the club for the flowers recently sent to Mr. Nelson, who is confined to his home, seriously ill.

The Nominating Committee reported the following gentlemen as candidates for the Board of Governors: W. A. Sayers, Jos. Wallenstein, C. F. Egolf, P. P. Hunter, H. M. Pollock, Clem Perrine, W. J. Brunsman and A. S. Brown.

Alfred Holzman delivered a beautifully worded little talk, the title of which, "Hitch Your Wagon to a Star," was both timely and appropriate.

### **FRENCH AUTOMOBILE EXPORTS FOR 1912**

The year 1912 showed a decided advance in the automobile exports from France in comparison with those of 1911. These exports amounted to 230,167 metric quintals (metric quintal=220.46 pounds), as compared with 175,591 in 1911. The exports of industrial cars, farming wagons, and heavy vans increased from 7,262 quintals in 1911 to 8,158 quintals in 1912. Among the countries of destination of these exports the United Kingdom stands first, having taken 60,765 quintals, as compared with 54,585 in 1911; Belgium follows with 55,799 quintals, as compared with 34,737 in 1911; Algeria with 21,640, as compared with 13,769 in 1911; Germany with 17,699, as compared with 14,624 in 1911; Argentina with 14,937, as compared with 9,265 in 1911; and Brazil with 11,994, as compared with 7,271 in 1911.

The imports of automobiles into France, according to the same source of information, increased from 12,819 metric quintals in 1911, to 15,051 in 1912. These figures are all necessarily provisional and no valuation was given.

### **BUFFALO DEALERS' SHOW**

The Buffalo Automobile Dealers' Association will hold a commercial vehicle show at the Broadway Auditorium, March 11-15.

# Paris Automobile Show

By Mr. G. J. Kellner, of Kellner & ses Fils, One of the Conspicuous Leaders in the French Coach and Automobile Trade

You were kind enough to ask us our opinion on the various bodies exhibited at the Paris Automobile Exhibition of 1912. Although, in this case, we are a little at the same time judge and party, we will make it a point to go through our task the most impartially possible, placing ourselves from a general standpoint, and without entering into unnecessary details.

In the first place, there was nothing very new, as far as regards the shape of the bodies, the general feature of the show tending to prove that the progress made this year consists specially in the details and in the interior luxury, a great many pains being taken to insure more comfort in touring.

We will first remark that the "torpedo" shapes and that the so-called "egg-shaped" or "ball-shaped" limousine bodies, with very highly curved tops, were in much larger number this year at the Olympia Exhibition of London, as well as at the Paris Exhibition.

The torpedo shape is by no ways new, for as you know, even before 1902, the firm of Kellner & ses Fils and Rheims & Auscher had manufactured racing cars which had this flush-sided shape, either cigar shaped or ball shaped, without any moldings or any projections whatever, these bodies being built on a same line from the bonnet of the motor to the rear.

The same remark applies to limousine bodies of the same order, for these two same firms, always on the lookout for novelties, exhibited bodies of this type at the 1910 Paris Exhibition. The firm of Alain & Liautard also exhibited that same year an inside drive limousine body which brought to the memory a warship turret.

Kindly excuse us for recalling these facts, but we believe that same is necessary in the interest of the truth.

As said above, quite a number of this particular type of bodies were seen this year, and the few foreign bodies exhibited were mostly of this kind, foreigners having readily copied the 1910 models which we have mentioned, and which had appeared at that time in all the coach building publications of the world. Messrs. R. B. Birge, Hugh & M. Sargent even produced our model in their very interesting work entitled "Practical Problems for Vehicles, Draftsmen and Mechanics."

Customers in general took quite some time to patronize these new lines, which, although they may have a more practical appearance, blending better with the mechanical parts and the shape of the motor bonnets, have the disadvantage of giving the cars a clumsy and ungraceful appearance on account of the total lack of moldings and projections and of their round and indefinite lines.

On the other hand, the exaggeration of these egg shaped lines has given birth to any number of absolutely ridiculous, odd and exaggerated bodies, built without any idea of proportion, and upon the whole giving the effect of very bad taste. It is easy to understand that bodies such as we have seen, some finishing in a point in the back, or with extensions on each side, hiding half of the rear wheels, etc., are things not made to last.

These fanciful creations are due to persons who have no respect whatever for proportions, have not the most elementary idea of drawing, who imagine they have found out every thing, and who do not realize the difficulty in observing clean cut correct lines which always look well, and the difficulties

which one comes up against in calculating the turn under, the swelling, the width and curves to be given to a body to give the whole car an elegant and well proportioned appearance.

The only thing which can be claimed in favor of these shapes is that they may offer some slight advantages in cars meant for speeding and in which everything is sacrificed to that purpose.

In reference to egg-shaped limousines, these bodies also have a defect which is deplored by tourists who, when traveling, especially in a mountainous district, like to have the best view possible of the scenery. In this respect, even the front canopy top is a disadvantage, for it limits the view, whereas cars should be built with the side windows coming up as high as possible and with the front canopy top as reduced as possible. Now, in the limousine bodies above mentioned, the top, on account of its curved and "mastoc" shape, necessarily drops down very low on the sides, in the front and in the rear, the result being that the people inside have the impression of having a circular rim around them, which prevents them from enjoying overhead views when passing through mountain passes.

However, we are not personally altogether opposed to this type of body, for, as said above, we were among the first to manufacture them, but we believe it is necessary not to fall into exaggeration in dealing with these new ideas.

There is always a happy medium, and it is the case of not forgetting that "in medias res stat virtus," and that good taste is always opposed to exaggerated things.

We prefer for limousine bodies, in order to safeguard the appearance of lightness and elegance, that these bodies, although being made without projections, be marked out by light moldings, and, if desired, the top built with slightly rounded corners.

Personally we rather like to see the front seat of limousine cars provided with doors, but we must say that we have a preference for this seat, to be made quite distinct from the rear part, for this avoids the monotony of the lines and gives the car a lighter appearance. This is another case where accurate designing is needed.

One of the features of the show was that there were quite a number of closed city cars, the advantages of which do not seem to have been appreciated by most foreign builders, perhaps because they were not egg shaped; we mean the coupes and coupe-limousines established without any canopy top over the front seat.

Personally, we think that these little cars are very graceful. Ladies use them for calling, shopping, men use them for attending to business, and most of these bodies are mounted on small horsepower, light, drop-framed chassis built specially low, such as, for instance, the 12/16 Renaults, and their object is to replace the smart horse carriages which were used before. In many cases footmen are still employed. The tendency is to recall as much as possible the style used in these horse carriages. One can hardly imagine without difficulty an elegant lady of Paris, New York or London getting out of a car which by its appearance brings to the mind a diving bell or a diver's helmet.

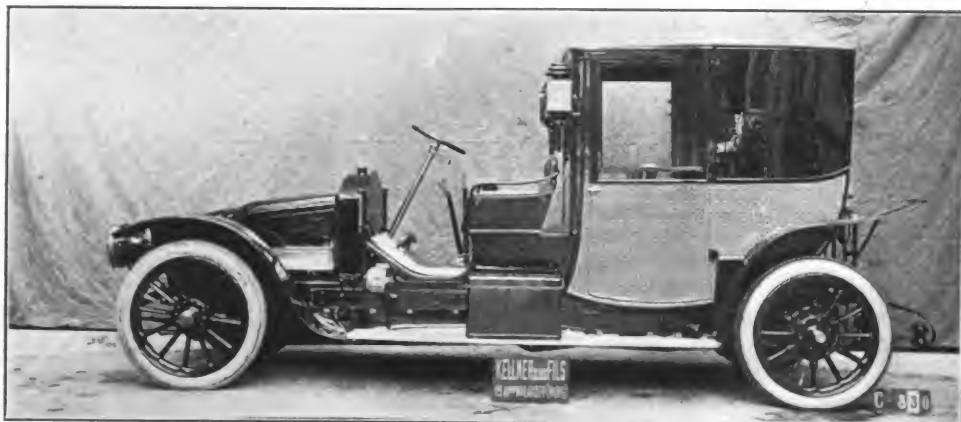
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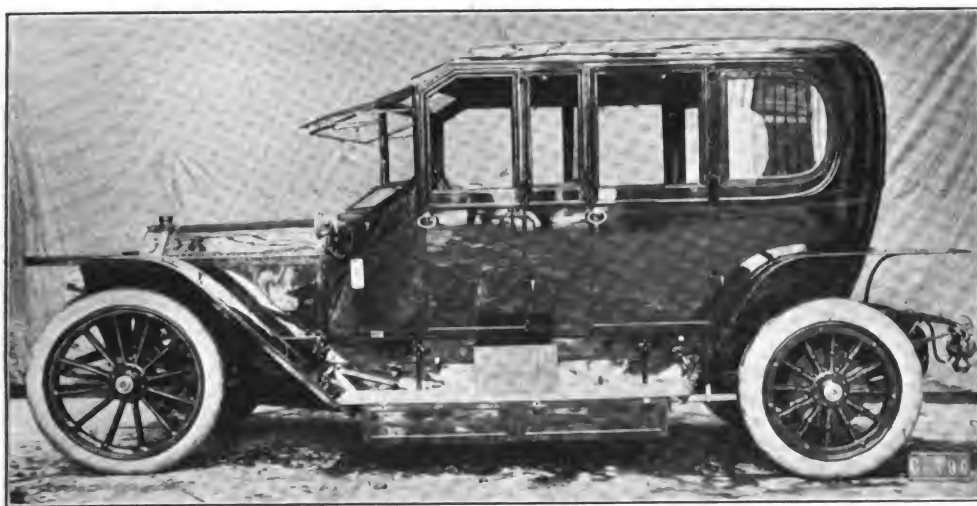
## LATEST TYPES OF AUTOMOBILE BODIES

From the Ateliers of Kellner & ses Fils, Paris

Contributed through the courtesy of this leading French firm

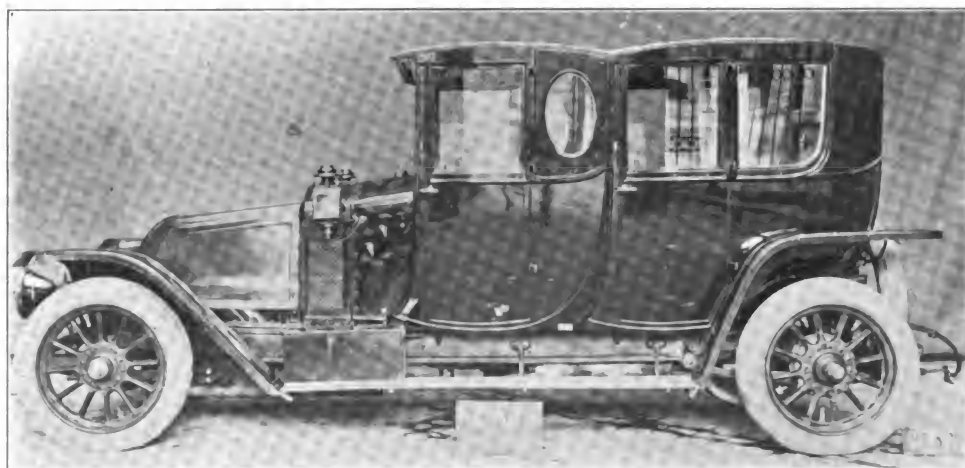
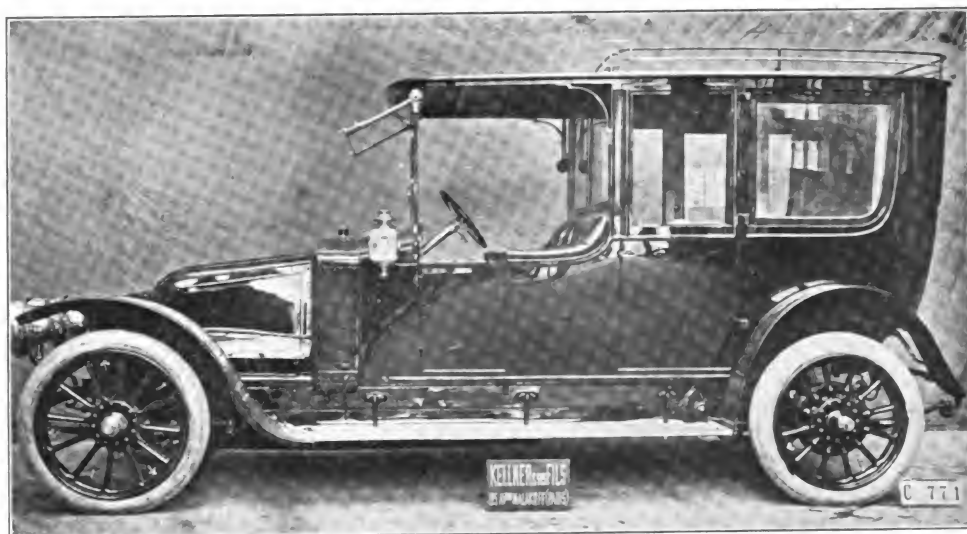
(See remarks in article by Mr. G. J. Kellner)











(Continued from page 397)

In horse carriages the coachman was never protected, and the same idea has been carried out in these automobile bodies. By separating the front seat from the body the interior of the car is made much brighter and gayer. Of course this arrangement does not render prohibitive having a folding or removable protection for the chauffeur, and at the exhibition quite a number of these were shown, most of them consisting of either a small folding hood in front or simply an extension curtain joining the front part of the body to the windshield, this extension being either made to roll up like a blind on a spring roller fastened to the front of the car, or made to be taken off entirely.

In Paris a great many chauffeurs do not like having a glass in front of them or a canopy over their head, and they prefer to simply wear a rubber raincoat and "sou'wester" or storm hat. When the chauffeur holds himself properly on his seat, and when this costume is well carried, it gives the city car quite a special chic appearance.

We have now come to inside-drive bodies, the use of which is growing in favor more and more, but we are sorry to say that some of these bodies are built with so much glass all around that they are really dangerous to drive in. In these bodies the egg-shaped line has also predominated, and the interior seating arrangement has been the object of many different ideas. On the whole these bodies, which were originally turned out in 1903, are very much sought after by people driving themselves and who have to use their cars in all sorts of weather.

To end up with closed cars, we must say that many of the cars exhibited were very luxuriously fixed up in the interior, and very special attention was given, in many cases, to the finish of the upholstery, to the softness of the cushions and backs; in fact, everything was planned to give the maximum of smartness and comfort. Some of the interiors were finished in fine inlaid hard woods. This is certainly a luxury, but it has given the French coach builders a chance of showing in these details the artistic imagination and good taste which generally is considered one of their qualities, and in spite of all that has been said we believe that, especially in this respect, there are a great many things which can be taken in Paris.

Now to pass on to open cars, there was at the show a quantity of torpedo cars which offered nothing new over the models of preceding years, with the exception that the lines were more correct and harmonized better with the bonnets of the machines. Some of these bodies had no mouldings whatever, the steel being simply bent in towards the interior, at the top, forming a sort of a curl. This work, although very interesting in itself, is a cause of a good many difficulties in its achievement, and we really do not think that "the game is worth the candle," for it gives a clumsy appearance, takes up quite some room, and is easily damaged. Moreover, the arms of the passengers rest on the steel, and this certainly cannot be comfortable.

Quite a number of these torpedo bodies were equipped with all systems of hoods very ingenious, but rather complicated, which allowed them to be turned into closed cars, such as the Janko hoods, the Merville & Morgan, Driguet, Courtois & Deshayes systems, etc.

Outside of these regular torpedo bodies there was quite a number of phaeton-landaulet bodies, or cabriolets, as they are called in England, and it is especially in this line that the different builders have displayed their ingenuity and skill. Although the construction of these cars may appear very simple, they are really very difficult to establish, for the making of the hood necessitates quite a number of ingenious combinations, which must be made as practical and as simple as possible in order to avoid the car making a noise and deteriorating after a short use.

To this subject we hope you will not bind our recalling that this type of body, which was made originally in 1906, is due to the joint efforts of Mr. George Kellner and Mr. Louis Wider-

kehr. Since that time this model has been copied by everybody, and has lately been improved to such an extent that it is really now the ideal type of a touring car. This body can be closed or opened at will, and in many systems the working of the hood is very rapid and altogether simple, being worked by one man alone.

Now, we believe we have indicated the general tendencies of the bodies manufactured at present, and we will complete these few lines by mentioning several accessory improvements: such as frameless windows, the new, very ingenious systems allowing to raise or drop the windows by the way of a handle and counterbalanced springs, doing away entirely with the cumbersome window straps; the innumerable wind-shield systems; the new tube-shape torpedo lamps encased in the scuttle dash of the torpedo bodies; the entire lighting of cars by dynamos which is growing simpler every day, and which, being made more and more reliable and practical, will certainly become general before long. Lastly, we wish to mention the use more and more in favor of double wheels at the rear, for heavy cars, and this is a thing really necessary, although it is difficult for the eye to get used to their appearance, and although they have the slight disadvantages of making the body narrower and cutting down a little the speed.

We believe we have now resumed the main features of the Paris Exhibition, and although we have seen several different opinions in foreign papers, we still believe that there is nothing more to be taken from Paris. This is easy to say when everything has been already taken. Naturally, it stands to reason that the automobile coach building trade, which now exists for nearly twenty years, is growing more sedentary, and that sensational novelties are becoming scarcer and scarcer. The point now where attention is to be concentrated is in the details, and in the general correction of the exterior and interior finish.

After all, an automobile car is really a luxurious rolling piece of furniture, the design of which necessitates quite some care, and we seriously do not believe that cars giving the effect of an overturned caldron will ever have the smart appearance and elegance of a car the lines of which recall, in general, the gracefulness and lightness of the styles of the last centuries.

GEORGES J. KELLNER.

## WHERE MOTOR TRAFFIC CONGESTS

Compared with Paris, traffic congestion hardly exists in London (assuming that the statistics are of real value). The Strand, the thoroughfare having the greatest volume of traffic, provided 16,208 vehicles during the day, or rather less than the unimportant Rue St. Honore. Gracechurch Street is given next with 12,148 vehicles, followed by Cheapside with 11,019. Even considered on a basis of numbers per metre width, the most crowded street of London is easier to negotiate than the most crowded in Paris, for the figures for the three London thoroughfares mentioned are 1,430, 1,136, and 1,149. It will be seen that the ratio of numbers to width varies very little in London, whereas in Paris it is as high as 3,141 and as low as 1,019 for the main arteries. Berlin follows London with 14,221 vehicles in Postdamer Platz, 13,479 in Friedrich Platz and 9,595 in Leipzigerstrasse.

As to the Americans, they are entirely out of the game. Fifth avenue at Fifty-eighth street, which can not be considered the center of the up-town section, had only 8,665 vehicles; Broadway, near Franklin street, being the center of the downtown section, had 3,277, and unlovely First avenue practically tied with opulent Wall street with a little over 2,000 vehicles. As to Chicago and Philadelphia, they have to be content to figure among the "also ran." To the motorists who have daily to drive or be driven along the streets of the world's greatest cities, the degree of traffic congestion is naturally of interest. To the Londoner who pessimistically imagined he had the worst conditions in the world, there may be a certain satisfaction in realizing that things are still worse in Paris.

## Low Grade Motor Fuels

N. B. Pope, in considering the high cost of gasoline, says makers as well as users of trucks should consider some of the suggestions he has to offer. We quote him in part:

We are approaching a point where the stringency of the fuel market must become painfully evident. Premonitory symptoms are (1) continued degradation of the gasoline of commerce; (2) increased prices for gasoline, which at present are tending in a mysterious manner toward a fairly uniform advance of nearly 90 per cent. over the ruling wholesale rates of one year ago; and (3) advances in the price of fuel oil east of the Rocky Mountains, indicating in some measure the effect of rapidly increasing consumption for all petroleum products.

The commercial vehicle is rapidly becoming an important factor in increasing the total consumption of gasoline. One truck may be said to consume in the course of a year about three times as much gasoline as one pleasure car. Hence the increase in commercial vehicle production must cause the motor truck to exert a preponderating influence on the fuel market as soon as the number of trucks in use exceeds one-third of the number of active pleasure cars. In a broad way, therefore, the introduction of low-grade and cheaper fuel for commercial vehicles should afford immediate and progressively increasing relief for the fuel market.

Using gasoline, the fuel cost represents at least 10 per cent. of the total cost of operation. Usually it is more. Assuming that by the employment of low-grade fuels a saving of from 30 to 40 per cent. of the fuel bill could be effected, and assuming the same consumption for the low-grade fuel as for gasoline, the substitution of the cheaper fuel would insure a minimum saving of 3 to 4 per cent. in the total cost of operation. Unquestionably the overall saving should be even greater, and by careful development of special carburetors and slow-speed motors for the purpose it is probable that the inducement to the user can be considerably increased. Indeed, one maker on the Pacific Coast, using engine distillate as fuel, claims a saving of 50 per cent. on the fuel bill and a 20 per cent. increase in power by doing away with gasoline.

As immediate substitutes for gasoline there are available: (1) kerosene, (2) distillate, (3) naphtha.

Kerosene is exceedingly plentiful, low in cost, uniform in quality, promises to continue in abundance and, if demanded in large quantities for motor fuel, could be disposed of in the domestic market with greater profit to the refiner than when marketed abroad, as is so largely done at present.

Engine distillate is a product obtained from the western crude oils after the lighter fractions have been distilled off, and, in a way, is analogous to kerosene in respect to its position in the scale of petroleum derivatives. It is less thoroughly refined, however, and at present is to be considered principally as a local product. That its practical equivalent could be produced from other asphaltic oils, such as those of Texas and Mexico, I believe to be the case.

"Naphtha" is as indefinite a term as "gasoline." In its present use it is intended to embrace not only the heavier fractions that commonly are included with the gasoline distillation, but also the fractions between gasoline and kerosene, which are at present lost to the automobile fuel market. Being slightly more volatile than kerosene and, moreover, free from the doubtful reputation that kerosene enjoys as fuel, it should prove easier to introduce, first, because the user is in nowise prejudiced against it, and second, because its employment entails less experimental development.

In considering the comparative utility of different fuels, particularly as between gasoline and the lower-grade petroleum distillates, whatever difference exists is, if anything, in favor of the heavier products. Volatility, however, as expressing

the ease with which the mixture may be generated, is of paramount importance. Volatility, viscosity and gravity together indicate the comparative facility with which a fuel can be reduced to the condition of a dry or wet mixture and so delivered to the engine.

That a liquid cannot be carburetted by ordinary methods need not condemn it for use, but it does exclude it from consideration as a fuel for automobiles of present construction. In this way it is perfectly true that the carburetor is the determining factor in fuel selection. As the values of volatility, viscosity and gravity are lowered the fuel becomes harder to vaporize, more difficult to force through small orifices, and requires a greater lifting effect (suction) to overcome its superior mass per unit of volume. With the heavier fuels different proportions must be employed in the carburetor in order to obtain results corresponding to those obtained in successful instruments designed for gasoline.

The quantitative expression for the relation of these all-important area and velocity relations is still locked in the designer's breast, but it is evident at least that a carburetor designed for heavy fuel may be more satisfactorily operated with gasoline than a gasoline carburetor with heavier fuel. To assist in the vaporization of the lower-grade fuels more heat is necessary than for gasoline. This is due to the fact that the latent heat of the heavier fuels is greater than that of gasoline. With the lighter fuels, such as 76-degree gasoline, a larger proportion of the fuel may be vaporized completely before the mixture reaches the cylinders. With the heavier fuels, on the other hand, most of the fuel reaches the cylinders in atomized liquid form.

The application of heat to assist the vaporizing action may be continued profitably only up to the point where volumetric efficiency is affected adversely. So long as the heat supplied to the mixture is absorbed in raising the temperature of the liquid particles, or in vaporizing the fuel, the volumetric efficiency will not be reduced, since the temperature of the mixture will not be raised; but the partial insulation of the liquid by the surrounding medium of air and fuel vapors prevents a free interchange of heat, particularly in view of the high velocities involved. For this reason the quantity of heat that can be supplied is less than that required to bring even the lighter fractions to the boiling point and convert them into vapor.

That a certain loss of volumetric efficiency can be employed profitably as an offset to the non-homogeneous and consequently slow-burning mixtures that otherwise would result is, however, probable. The law of compromise will stand considerable investigation in this respect.

High velocities, likewise, while tending to promote evaporation by mechanical action on the liquid particles, can be employed only to the limiting point where the volume of the charge is reduced by excessive fluid friction. Practically speaking, both methods must be used in combination. In any case it must be borne in mind that the bulk of the vaporizing process with the heavier fuels must be carried on within the cylinder during the compression period.

The design of the heavy-fuel instrument, therefore, must be postulated on the theory that it will handle at all times a wet mixture, and due provision must be made against the separation of the liquid component by baffling surfaces. Furthermore, since a certain amount of separation must occur from this course, with consequent tendency to "loading" of the mixture under certain running conditions, its effect must be minimized as far as possible by providing ample heating for all critical points in the manifolds and ports.

However successfully a carburetor for low-grade fuels may

be made to function under normal running conditions, starting will be rendered difficult in just the degree that normal operation is dependent on heat supplied. Of the two available methods of counteracting this difficulty—one the supplying of artificial heat prior to starting and the other the use of a more volatile fuel for the first few charges—the latter is by far the simpler and easier to accomplish. Where normal carburetion is dependent largely on high velocities to convey the mixture to the cylinders, starting the motor when cold is accomplished more easily. Ease of starting thus becomes, as it were, inversely proportional to the normal velocity effect under running conditions. Hence it is reasonable to conclude that a mechanical starting device will always be required for low-grade fuel motors, and that, in addition, either the use of a high-grade fuel for the first few moments of operation will be necessary, or else a method of priming. In many respects the latter method is preferable, especially if acetylene be used, since it permits starting without special carburetor adjustment (other than choking of the air), simplifies bi-fuel tank and piping complication, and further introduces into the primary charges a high-velocity combustible which serves as kindling material for what is practically a normal charge.

There is every reason to believe that in the natural course of events engine-starting appliances will soon become a practical necessity on all motor vehicles, so that the development of such devices for commercial vehicles in connection with the adoption of low-grade fuels need not be viewed in the light of a special and purely incidental burden. Practically speaking, starters are more necessary on commercial vehicles than on pleasure cars, through their economic advantage in conserving the driver's energy and because they permit the shutting down of the engine for all loading stops.

On combustion the lower-grade fuels, containing, as they do, larger proportions of unsaturated hydrocarbons, give rise to more complex reactions than the higher-grade fuels, with consequent tendencies to the deposition of free carbon. Due to the complicated nature of the process, and on the hypothesis that certain of the reactions must proceed in sequence, flame propagation is less rapid with the heavier hydrocarbon, even with homogeneous mixtures that are properly proportioned. With incompletely vaporized mixtures, or those which are not agitated during the compression stroke and which in consequence may be described as in a "lumpy" condition, combustion will be further delayed by the completion of the mixing process as a result of the agitation of the flame waves. Because of this double retarding influence, slow combustion almost invariably accompanies the use of the lower-grade fuels, which are in consequence suitable for slow-speed motors only, so long as carbureting methods approximating those at present in use are retained. As the slow-speed engine is well adapted in other respects for commercial vehicle use, however, it follows inversely that the heavier fuels are particularly adaptable to commercial vehicle purposes.

As a large proportion of commercial vehicle types may be said more truly to be in the early stages of evolution than are pleasure vehicles, it follows that the adaptation of special apparatus for handling low-grade fuels will work less hardship on the truck manufacturers than it would if forced on the builder of established types of pleasure vehicle. Further, the higher valuation placed on operating economy by the commercial vehicle purchaser must tend to render the kerosene or naphtha-burning machine a more acceptable offering in that field than a pleasure car possessing the same feature would be in its field. Indeed, were it possible to offer almost any large truck user a carburetor that would handle a low-grade fuel as efficiently as his present carburetor handles gasoline, there is little question that he would accept the substitute immediately, on the basis of a not unreasonable performance guarantee.

The Emery Carriage Co., Somerville, Mass., was destroyed by fire on February 27.

## SHOW OR NO SHOW

The executive committee of the National Association of Automobile Manufacturers, at its meeting in Chicago, practically ranged itself against the Pope idea that the national automobile shows be discontinued. Pope himself is a member of the committee, although he was not present at the meeting, but the eight members who were in attendance voted unanimously to repeat the Chicago show, at least, in February, 1914. The N. A. A. M. has nothing to do with the New York show. The members who so voted were: S. T. Davis (Locomobile), Charles Clifton (Pierce-Arrow), Hugh Chalmers (Chalmers), L. H. Kittredge (Peerless), W. C. Leland (Cadillac), H. O. Smith (Premier), H. H. Rice (Waverley). W. E. Metzger, president of the association, was in the chair and, of course, did not vote.

There were also present at the Chicago meeting Samuel A. Miles, general manager of the N. A. A. M., and J. S. Marvin, traffic manager. Miles himself holds exclusive rights to stage automobile shows in the Chicago Coliseum, and since last week's meeting his office has supplemented the action of the N. A. A. M. executive committee by press matter designed to indicate that the continuation of the Chicago show, at least, is highly desirable. This publicity matter states that, far from desiring the show to be abandoned, a number of the car manufacturers have asked that the 1914 pleasure car section cover a period of ten days instead of seven days, as heretofore.

It also is stated that 3,400 dealers attended the Chicago show and that some manufacturers who originally expressed themselves as favorable to Pope's idea since have explained that their attitude has to do with local shows and not the national exhibitions in New York and Chicago.

On the other hand, there are those who have rallied even more firmly to the Pope standard and who emphasized their position that the shows have outlived their usefulness, and that the great expense and far-reaching disorganization of factory and sales operations which they cause each year more than offsets any possible good they may serve.

One prominent manufacturer, who is not of the number that engages in spread-eagle show advertising, declares that the New York show alone entailed an expense of \$30,000. Another, M. J. Hammer, general manager of the Abbott Motor Car Co., asserts that the industry owes a debt to Colonel Pope for taking the lead in the movement. He does not believe abandonment of the shows will cause the trade to suffer any reduction of business, and holds that if a national automobile show must be held it should occur during the summer, at about the time the manufacturers introduce their new models, and should be held at a midway point, preferably Detroit.

All of which makes evident that when the N. A. A. M. executive committee convenes in regular session next month there will be scope for pointed and momentous discussion.

## SUES ITS GENERAL MANAGER

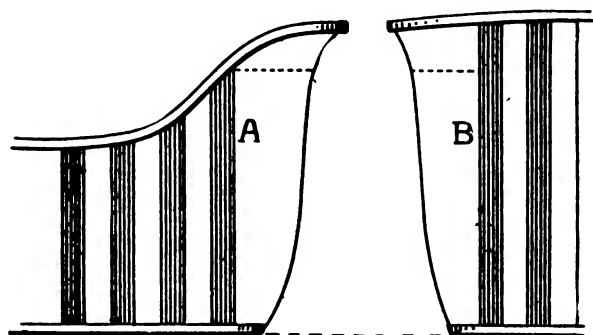
H. W. Hayden, vice-president and general manager of the Mason Motor Co., of Waterloo, Ia., has been made the defendant in an action instituted by the company, which charges conversion and misappropriation of funds to the amount of \$18,000. The complaint asks judgment for that sum and prays that a lien be placed upon certain stock of the company held by Hayden.

According to the papers in the case, Hayden became a Mason stockholder in September, 1911, when he acquired 1,888 5/6 shares, each of \$100 par value. In January of the following year he was made a director of the company and assumed the vice-presidency and general management. Between September, 1911, and January 25, 1913, according to the complaint, Hayden had charge of the financial affairs of the company, making collections, receiving moneys, drawing checks, etc., and it was during this period that it is alleged he converted to his own use, or otherwise misappropriated, funds to the amount of \$18,000.



## Art of Lining

For heavy black lines the camel hair will be found the most useful pencil; for colors, such as the chromes or reds, and any colors carrying white lead, the camel is too weak and will bend over. Resource must be had from the red sable. This applies more especially to the wheels, where a pencil is needed that will keep erect in order to get up between the spokes. On the hub and sides of springs the camel hair will work all right. All that is needed on these parts is a pencil that will lay down in position, so it is good policy to have both pencils in use, and use them where you can with the best advantage. For fine lining, from the finest to the pipe line, there are three different pencils one may use—first we have the sable as used



by many, then we have the camel hair, which is a very useful pencil for medium-sized lines, but a failure for fine work. Next we have that more recent introduction, the sword pencil. For very fine lining the sword is an ideal pencil. It will carry any color, produce accurate work, and do so in less time than either of the others. It is also very useful for introducing a little fancy lining. As an illustration of this you can run a fine line right around the rim of the largest wheel without once lifting the pencil from the work, an impossibility with any other pencil. But once you leave the domain of fine lines and get into the medium and pipe lines this superiority of the sword pencil gradually disappears; in order to get good solid lines with nice square ends, the color requires to be heavy bodied, and if the sword is used with such colors it starts to droop, and will not give you the same even finish that a good sable pencil will do. There are some places that you may use the sword throughout, such as wagons, where accurate lining is subordinate to quantity. The small camel hair fine liner is very useful for the heavy fine or pipe liners. On places where one is cramped for room they will do the work equal to any other pencil, and although soon knocked out of shape, will give a good return for the outlay.

The lining of carriages and buggies is almost automatic, one might say; the same patterns are repeated year after year. As for variation we were at a standstill until the advent of the automobile. This has completely broken down the hard and fast notions we entertained in respect to lining generally. Combinations of ground colors and styles of lining have been introduced that have upset all of our preconceived notions on this point. Patterns have been introduced that if used on a private carriage a year or two ago would have been simply laughed at by the very people who now ask for it on the motor. Take, for instance, the striping of the body and seats, where the whole panel is striped in alternate shades in any particular color. This, if applied to a brougham or landau, would not have been tolerated, because it was not the fashion of the moment, and yet if the colors employed are rich and subdued

nothing could be more pleasing or resting to the eye. This fashion, which was very much in vogue about the year 1840, after a few year's popularity, gradually died away, to be revived again recently by the French painters on their automobiles.

One pattern is to paint the panels a dark green, with a light green stripe. Another is dark blue, with light blue stripes; another light lake with dark maroon stripes; in fact, there is unlimited scope for the painter to exercise his abilities as a colorist here. Keep your colors subdued, and your stripe is, say, half an inch wide, see that your space on the ground is the same. On flat panels all that is needed is the compass and straight edge for marking out, excepting the first upright line, which should be got with the square, but from this point the compass will give you all points true. Another point to observe is to start from A, Fig. 1. In the case of a curved seat you will need a very thin piece of wood that is pliable. This will lie into the shape of the panel, thereby enabling you to mark out accurately, and also serve as a guide when drawing the stripe. The most difficult portion of a curved seat is the corners, and these should be marked out as shown, A is the first stripe got with the square on the side of seat; next compass round the corner on the bottom edge until you come to a point where you can strike an upright stripe with the square on the back portion of seat, as shown at B. You will now observe that the distance from A to B is greater at the dotted line than it is at the bottom. You have your spaces marked at the bottom, and, say you have three stripes to carry you round, you must divide the top into that number also. This will give you the stripes a little wider as they ascend, but the increase is uniform, both on the stripe and ground. I know of no other way of negotiating this corner if you wish to be accurate in your work.

The picking out and fine lining of a carriage is considered the most artistic part of painting. No doubt this is quite true, and although the picking out is often considered of less impor-



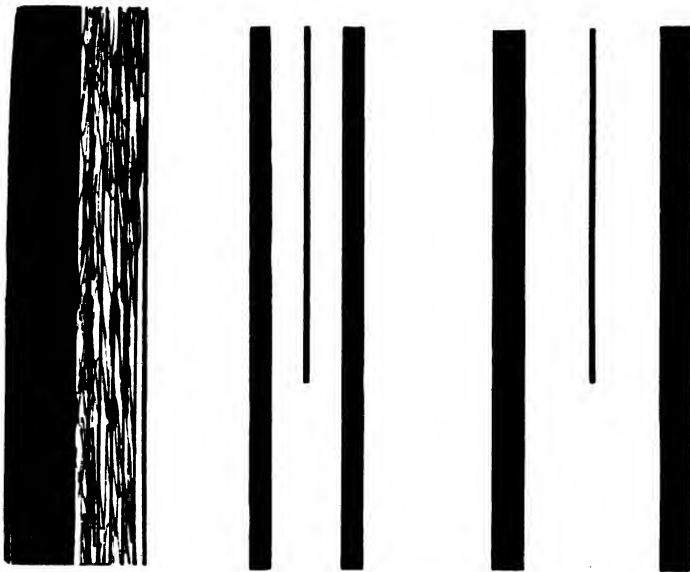
tance than the fine lining, we must admit that if a job is picked out without due consideration as regards what one might call the line of beauty in the construction, the fine lines which follow the picking will only serve to throw out more prominent any defects arising from this cause, says The Australasian Coachbuilder and Wheelwright.

Wherever possible, the picking out line should follow the center of the work, such as tops of springs and axlebeds. On other parts, such as spring blocks and face of head blocks, which give a side view, the lines should be run round the outer edges. By following these points you line to advantage; but if you get into the habit of throwing lines on without due regard to the build the work gets cut up, and you destroy the symmetry of the whole, besides wasting time. There is really no occasion to line the sides of spokes on buggy work; it only serves to make the wheel look heavier than it really is.

In the case of a job where lines from half an inch upwards

are run on without any fine lines, it is usual to glaze them; in such a case be sure the lines are bone dry. The line should always be of a lighter shade than the glaze. A medium toned blue should be glazed with ultramarine, bright red, or vermilion, with carmine. Light green with verdigris. The glaze should be slow drying and fairly thin. Each individual line should be glazed right through at once, and where a join is necessary do so at once, as if left for a few moments the lap will show up badly. A perfect piece of glazing should not show the least sign of a join, but should be uniform as regards color throughout.

With reference to spacing of lines strict attention should be observed to this. For instance, the lines on springs, hubs, and felloes should be placed so that the outer edges of pattern should be equidistant with the outer edge on both sides. We frequently see the rim lined decidedly out of the center. In lining these places, if the body color is of a dark cast the center should be struck midway between the rounded portion of the rim and the outer edge of tire, as shown in Fig. 2; but if the ground is of a yellow or light red then it is usual to



black the tire, and the center must be struck from the inside edge of tire as shown—otherwise your line will be decidedly lop-sided on that portion where the tire is black. Again, in the first you are able to run on a heavier line than is possible where the tire is black on a light ground, as you have more space at your disposal.

Another style of glazed lining, generally known as shadow glaze, is shown, Fig. 3. This is done by first picking out a heavy line of blue or red on a ground to harmonize, and when dry glaze one-half a deeper shade, and when doing this always put the glaze on the inside half of line. Fig. 4 shows a pattern known as double pipe lining. This is a pattern that requires good straight lines with perfectly square ends, and should always be run right through any given surface, not crossed at the ends.

Pipe lining perhaps is the most difficult lines we have to draw in the straight section. They should be of regular thickness throughout, with ends well squared up. If this is not done with this size line defects will show up more pronounced than would be the case in fine lining. The space between these lines is also an item worthy of attention, as shown. In Fig. 4 the spacing is correct, and gives an evenly balanced pattern, but if spread out as shown at Fig. 5, which is often done, the pattern has a spread-eagle appearance—that is, the reverse of neat or compact; white or red look attractive on a blue ground; red lines on a lake ground is also good taste. For red or yellow ground, black is the only color we can employ with this pattern. This pattern can be added to with

advantage by running a fine line in the center, as shown by the dotted lines, but do not introduce another color—this pattern being much better worked out in one color. Fig. 6 shows the picking out and distance line. This picker may be from a quarter inch upwards, according to the size of the individual job in hand. Fig. 6, as shown, is the usual distance, but there are a few painters who make a practice of running their lines up close as shown in Fig. 7; this latter needs very accurate lines, and although seldom done, is decidedly the neatest of the two.

## CONSULAR REPORTS ON AMERICAN CARRIAGES ABROAD

### ARABIA

It is not generally known that American vehicles predominate in this consular district and that the American survey is used to the exclusion of almost every other vehicle wherever there is passenger traffic. In Aden and in Jibuti, French Somaliland, where hundreds of tourists land every week, the American survey is used for sight-seeing purposes and has proved a very satisfactory vehicle. When not engaged in this manner it is used by the native population as a medium of transportation between the city of Aden, with its 30,000 people, and Steamer Point, with its 7,000 population, a distance of five miles, for which a charge of 8 to 16 cents is made for each of the four passengers. The horses are small and underfed and it would be inadvisable, therefore, to introduce larger surreys. The present type of survey has proved eminently satisfactory and thus far the product of no foreign country has threatened American supremacy in this line.

The native prefers the American carriage for its cheapness and superiority, and this is also true of the Europeans residing in this district. About a dozen American carriages of the survey type are imported every year and there are now over 130 in Aden.

The satisfaction given by American vehicles prompted imitation by native artisans, mostly Indian blacksmiths, but they were not successful. These men attempted to make wheels, but the product was so unsatisfactory that wheels were brought from India and the United States. The first carriages passed muster upon inspection by the local authorities, but it was not long before they required constant repairs. The low price of these carriages, \$129, proved very attractive at first, but a few months of wear and tear on the hard, flint roads and hills of Aden soon dispelled the hopes of Aden carriage makers. The Indian blacksmith is now principally in the repair business, and painting and finishing are done by local workmen.

It should be borne in mind that it is absolutely necessary for the front seats of the survey to be of the full-turn pattern and that the step should be low, as there are no elevated sidewalks in this part of the world. Perhaps the only complaint against the American survey is that the steps are too high, and manufacturers would do well to lower them for the convenience of both men and women. The upholstery should be of leather.

An arrangement whereby the driver could be separated from passengers occupying front seats would be a highly desirable and popular innovation. Some carriage owners already have seen the advantage of such an arrangement and have placed a small seat for the driver between the front seats of the survey and the springboard of the carriage.

American surreys sell in this market for \$227 to \$259. If the buyer buys for cash he pays \$227, and if he buys on the installment plan he pays \$259, usually \$16.22 cash and \$3.25 to \$6.50 a month.

### GUADELOUPE

A runabout received in Guadeloupe last year from the United States weighed but 475 pounds packed ready for shipment. The purchaser was much pleased with it because, although very light, it was well and strongly constructed.

The island of Guadeloupe proper is formed mainly of six

large volcanoes which are strung along one after the other and make the backbone of the island. The slopes of these volcanoes reach down to the sea and the various plantations are located on these slopes. The roads are necessarily very steep, the average ascent being 12 per cent., but in many places the grades run as high as 20 per cent. As a consequence all carriages used must be light in weight but strongly built. American carriages are commanding this market because they fill these specifications.

Very few people in Guadeloupe speak or read English and a dealer looking at an American catalogue and seeing illustrations of apparently heavy vehicles will turn to a catalogue which shows lighter carriages and ask no questions concerning the former.

Double-seated carriages between Basse Terre and Ste. Claude are hauled by three American mules, and although the distance is but  $4\frac{1}{2}$  miles the time taken is from  $1\frac{1}{4}$  to  $1\frac{1}{2}$  hours, and the mules are utterly exhausted when they arrive at Ste. Claude, because of the grades and the heat. (The names of the leading carriage dealers at Basse Terre and at Pointe a Pitre may be obtained from the Bureau of Foreign and Domestic Commerce.)

### MEXICO

Outside of the cities of Mexico very few vehicles of any kind are used, as the roads are poor and fit only for single horses and mules, which carry passengers and freight on their backs. On many haciendas carriages are used for short distances by the families of the owners.

In the cities the heavy traffic is largely carried on by two-wheeled carts drawn by mules, though in recent years the American wagon has come into use, especially by the municipal governments, to gather the refuse from the streets and houses. For pleasure driving the French fiacre and victoria shapes are the favorites, being delivered in Guadalupe at a lower price than American-made vehicles of the same class.

There is some demand for buggies and covered surreys in the cities, which is supplied through local houses by American makers. The only carriage parts handled by local houses are springs and axles, which are of American make exclusively, and rubber tires, whose source of supply varies according to the market for rubber.

The weather here being usually clear and never very cold, closed carriages are not in great demand except for special occasions, such as weddings, hence few are sold; during the rainy season oilcloth covers are used in the victorias for protection against rain.

### CHANGES IN FOREIGN TRADE

Some of the striking changes in the foreign trade of the United States which have occurred during the past decade are illustrated by statements to be published in the issue of the Monthly Summary of Commerce and Finance showing the articles imported and exported in each calendar year from 1902 to 1912. While the articles specified are more than 1,000 in number, a few instances in which striking changes have occurred are interesting. For example the number of cattle imported during the period in question has increased from 93,000 head in 1902 to 325,000 in 1912; while the number exported fell from 327,000, valued at \$24,000,000, in 1902 to 46,000, valued at \$3,500,000 in 1912.

Breadstuffs showed a marked change in trend, the value exported having fallen from \$196,000,000 in 1902 to \$162,000,000 in 1912, while the importation of breadstuffs increased meantime from \$5,500,000 in 1902 to over \$19,000,000 in 1912, the increase having occurred chiefly in wheat, oats, flour, rice flour, and macaroni.

Copper imports show a very large increase, this increase being especially noteworthy in view of the fact the United States produces half the world's copper and does not, therefore, need to import copper for her own use; this increase in importations, from 103,000,000 pounds of copper pigs, ingots,

and bars in 1902 to 305,000,000 in 1912 being largely accounted for by the fact that the metal in question was sent to the United States by reason of its superior facilities for refining the copper and extracting the precious metals. Copper exports have doubled, from \$355,000,000 in 1902 to \$775,000,000 in 1912.

Of india rubber imports the growth has been very large, the demand for automobile tires especially having chiefly developed during the ten years in question. The value of the imports of india rubber, and substitutes therefor, was, in 1902, \$25,500,000, and, in 1912, \$111,000,000. On the other hand, the exportations of india rubber manufactures grew from \$4,000,000 in 1902 to \$13,500,000 in 1912.

### STRIKE AMONG RUBBER WORKERS IN AKRON

A strike is on among the rubbers workers in Akron, Ohio. The origin of the strike came about through a dispute between the management of the Firestone Tire & Rubber Co., and the employees, over a new schedule for tire finishers; the management contending that under this new schedule finishers could make \$3.50 a day, while the employees contended that this could be done only by exceptional men under exceptional conditions.

This new schedule was proposed February 11 or about that date. Mr. H. S. Firestone made the following statement regarding it: "This new schedule, which will give the average tire finisher \$3.50 per day, was occasioned by the use of more machinery in the production of the tire. By this new machine method one man builds the carcass and the other finishes the tire. That makes two processes where formerly there was but one. The tire finisher was therefore a new feature for us to deal with. We desire to fix a rate that will give the finisher \$3.50, believing that to be a just and reasonable wage. While experimenting with the machine we made a rough allowance to the tire finisher of one-third the price formerly given the man who made the whole tire by hand. This allowance was to last only until a reasonably just rate could be arrived at by practice. The temporary rate given tire finishers lasted only a few weeks. It is true that finishers made unusually large wages during that time, but it was understood that it was merely a provisional arrangement. This led to the differences that appeared when our \$3.50 scale was reached.

"The rate first decided upon, it was felt, would bring this result. The men in the tire finishing department agreed that under this scale they could on some days earn \$3.50, but they felt that they could not maintain this rate week in and week out. After another careful consideration of the whole subject, we decided upon the scale now in force. It enables beyond question any experienced tire finisher who is an average worker to make \$3.50 a day.

"The installation of machines for the making of tires makes the labor building tires lighter, and while the output of tires would be increased, and the rate paid the tire maker less for each tire, the tire makers are able to earn the same average of \$3.50 a day with lighter work.

"The new scale affected less than 60 men, but later would have affected more. I am sure that now our men in their own hearts have no grievances and are perfectly satisfied."

Mr. Firestone further said, "There has been nothing in the present situation that we could not or would not have adjusted to the satisfaction of the company and its employees, and all the present trouble in the rubber industry is caused directly by the agitation of men who do not live in Akron, who have no real interest in Akron or its people, and who would, when peace has been restored here, pass on to the next place where trouble will be started."

The workmen refused to accept the schedule and walked out, and have been endeavoring to create a sympathetic strike by inducing the other rubber workers to come out and by threatening to have the strike extend through all the rubber factories in the United States, and by trying to induce the allied trades and the railroad and street car men to walk out. The local and national organizers of the I. W. W. have been in Akron and

have tried to arouse discontent among the rubber workers, and to prevail upon them to join the I. W. W. Many without knowing the purpose of this organization have joined it. Several of the smaller factories have felt the effects of the strike more than the larger factories.

Work in the rubber plants is to a great extent dependent upon the different departments working together, and the loss of a few men in one department may tie up a whole plant, so that it is hard to state how many are actually striking, and how many are home on account of some other person striking upon whose work their work depends. At present the State Board of Arbitration is endeavoring to bring about an adjustment.

The leaders of the I. W. W. and of the American Federation of Labor have been exceedingly active in getting the rubber workers to join their organizations. A great many of the employees are standing loyally by their employers, but it cannot be denied that the work of the rubber factories is badly crippled.

### SHALL THE UNITED STATES BUILD HIGHWAYS?

It is a question which is slowly but surely forcing itself upon the national legislature. Many Senators and Representatives now believe that the building of a system of national highways is of more economic importance than any other public work—more vital than the question of a large navy, more useful than any river and harbor improvement, more necessary than the Panama Canal. For highways are built and owned by the people and are free to all the people. A few years ago road bills had short shrift in Congress—at present there are nearly a hundred bills before Congress dealing with road building in one form or another.

Although the "good roads" idea has been gathering force and headway for many years, its advocates are still pulling in many directions. Some road associations want state highways with national aid. Others want state highways without national aid. Still others want good roads paid for by the counties through which they pass, without any aid. One, at least, believes firmly that the question is not only one for states, counties, cities and towns, but for the nation.

The National Highways Association believes that the beginning of a comprehensive good road system for the nation must be made by the federal government.

Such a system consists of fifty thousand miles of national highways.

It is universal experience that one mile of good road breeds another mile. Put a state-wide, good road down anywhere in this country, and in ten years there will be dozens of good roads reaching it from all parts of the state. Put down a system of national highways, built and maintained by the national government, and the various state legislatures and county officials would soon see the advantages of connecting all parts of the states with those national roads.

#### Two Million Miles of Roads in the U. S.

France has national highways. These are immense trunk line roads, great arteries of commerce, and from these the smaller roads are built by the provinces of France, just as the states and counties of our states will build feeders and connections to a national system of highways.

Many idealists and dreamers have proposed national road systems for this country. Usually the system has been worked out with a map, a ruler, a pencil, and sublime faith. Mountains, lakes, rivers and forests form no obstacles to such visionary road systems. The national highway system is the product of no such dream. The highways indicated are either the best present road from point to point, or what are, in the judgment of a trained and experienced corps of road engineers, the best possible and practicable roads from point to point.

But these engineers, who worked months on hundreds of

large scale maps, and with the aid of nation-wide correspondence of more than 15,000 personal letters asking information and advice know this system is only tentative. It is but a suggestion. It is not intended to be anything else. There must be a beginning to everything, and little headway can be made without some such careful plan from which to start.

To build such a system complete will take a man's lifetime and a huge amount of money. If the wealth of the world were ready to build this system tomorrow, it would still take many years, because there are available neither engineers nor knowledge enough to do it quickly.

When this, or a similar system of national highways is built—and built it surely will be some day—it will be by a national highways commission, which first locates and then builds, one or more roads at a time, learning as it builds. When this huge amount of money is spent—as spent it is bound to be—it will be gradually and through an annual appropriation.

### THE COOLING SYSTEM

The cooling system on motor cars is not considered a very intricate one in view of the fact that the mechanical details of parts connected therewith are comparatively simple as compared with the parts of an ignition system. Nevertheless the cooling system is responsible for many troubles in conjunction with the car. The troubles in the cooling system are unique in that they invariably result in heating, which exhibits itself very readily in the loss of power. Roughly speaking, three-quarters of the troubles in the cooling system are due to lack of water. At times this lack of water is owing to not enough in the radiator, at other times it is because of an impaired water pump, and at other occasions is due to some stoppage in the water system. Because of the apparent simplicity of the water system of a car many of the troubles are directly due to this. The ordinary driver feels that nothing is necessary but to keep the radiator full, forgetting, as he often does, that incrustations form on the jacket walls and that passages in the radiator frequently become clogged, as well as stoppages which are occasioned by defective gaskets, which partially obstruct the water passages leading into or out of the jackets. The simplest and most effective way to avoid incrustations in water jackets is to see that the radiator is filled with rain water. It will repay ten thousand fold for any difficulty that may be had in procuring it.

### JACKSON, MICH., MEN IN CANADIAN WHEEL COMPANY

The Chatham Wheel Co., of Chatham, Ont., backed chiefly by American capital, has been organized under the laws of Canada with an authorized capital of \$50,000. The company will build complete wheels, including the wood parts, hubs and rims. It represents a joint enterprise of men prominently identified with the Sparks-Withington Co., the Hayes Wheel Co. and the Jackson Rim Co., all of Jackson, Mich. M. Davies, of the Hayes company, will be general manager of the Chatham plant. Among the other stockholders are William Sparks, R. H. Withington and Winthrop Withington of the Sparks-Withington Co.; C. B. Hayes, of the Hayes Wheel Co.; O. W. Mott and C. B. Williams, of the Jackson Rim Co., and M. V. Chaplin, of the Chaplin Wheel Co., of Chatham, Ont.

### MILLION DOLLAR TIRE COMPANY ON COAST

W. D. Newerf, who for many years was prominently engaged in the tire jobbing business on the Pacific Coast and who latterly has been occupied in organizing a company actually to manufacture tires in that territory, has matured his plans to the point of incorporating the Panama Rubber Co., capitalized at \$1,000,000. It is stated that he has interested a number of Los Angeles and San Francisco men in the enterprise and that a factory site near San Francisco is being considered.

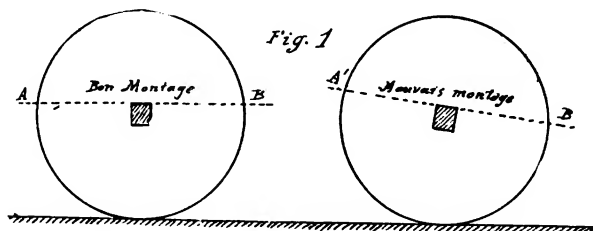
# Theory of Axle Alignment

A French writer says it is very necessary to have correct axle alignment to secure the advantages that ought to be found in a well adjusted arrangement.

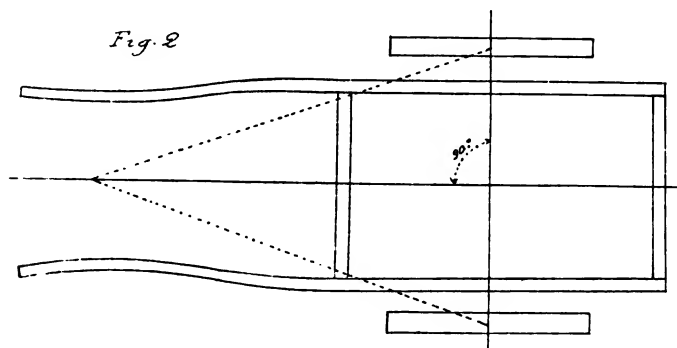
In mounting an axle on a two-wheel vehicle two conditions

vehicle to track on the road exactly in line with the efforts of the horse, thus avoiding lateral slipping.

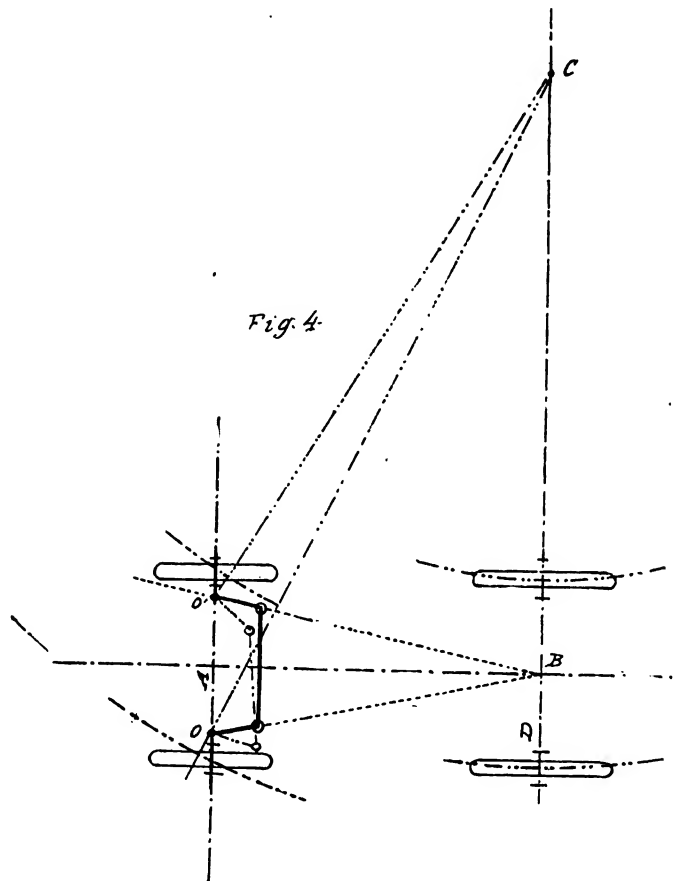
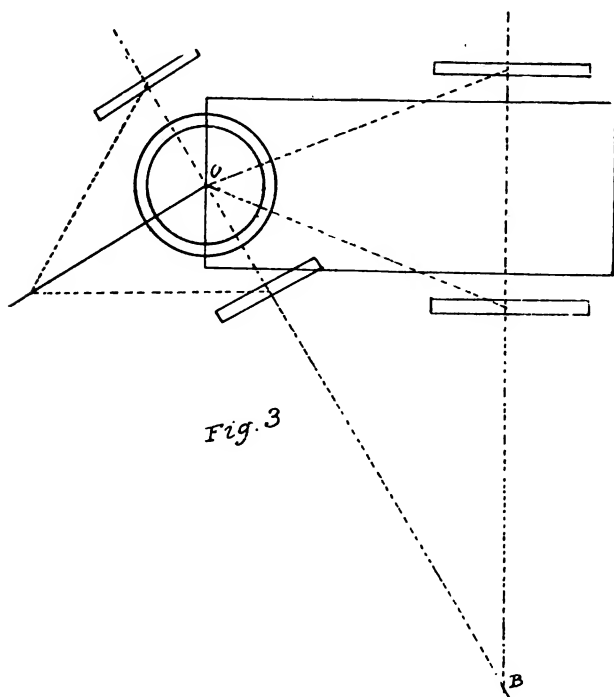
Four-wheel wagons are to be considered the same as two-wheeled vehicles so far as the axles are concerned. The first



are necessary. The vehicle horsed and bearing its normal load on a level road surface, the axle should show in a straight line as in the left hand drawing in Fig. 1. The second design shows a bad practice.



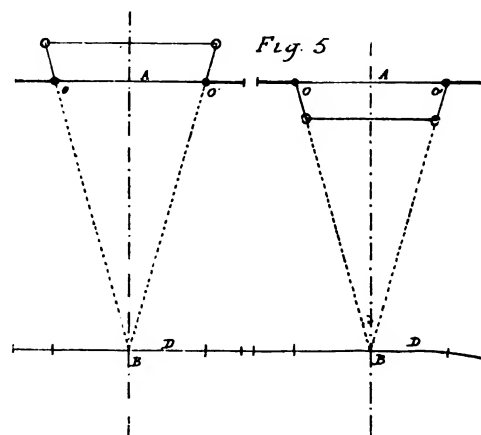
In Fig. 2 a perpendicular elevated from the middle of the axle should show lines at angles that come to an apex exactly under the middle of the draught animal. This will cause the



vehicle (the front of the wagon) is spring mounted as above explained.

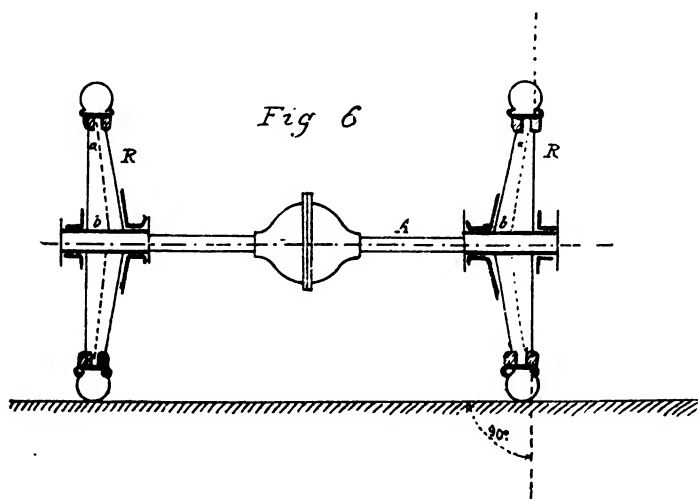
The second vehicle (or the rear wheels) follows the same rule with the difference that the perpendicular erected from the center of axle should project in angles as shown to meet at a point centered on the fifth wheel.

The automobile front axle has no king pin and does not swing its front wheels or cut them back as is done in wagon





practice. When such a vehicle turns in order that there shall be no slipping, it is necessary that the four circles described by the four wheels have their centers common to each other at the same instant. To get this result from the handling of the steering wheel, a diagram is shown (Fig. 4) showing the necessary angles that are made to secure an accurate result. A is the front axle. D the rear axle. O and O' the steering knuckle centers. B the center of the rear axle. A line is drawn through B O and B O' which lines will give the exact



inclination of the levers. The steering lever (front or rear of axle) will thus have its articulations cut by the projected lines B O and B O'.

C, Fig. 5, thus becomes the common center of the curves described by the four wheels when cramped for a turn.

In some vehicles, to simplify the transmission of power to the rear driving wheels, the rear axle is made to be flexible. This operation interferes with the stability of the wheels, which have then to be modified somewhat as shown by the line A (Fig. 6, floating axle) R R' the wheels on this axle, A b, the dish necessary to the spokes of the wheels to preserve their solidity. The angle can be perpendicular to the ground if there is no floating axle, and secure good results. But if the construction as shown is adopted, it is claimed the spokes must be enlarged at base and at back. We take the account and illustrations from *Le Moniteur*.

## DRIVER'S POSITION—NEWS ABOUT AMERICA

The fact appears to have been overlooked that France, which originated left-hand steering, with brake and change-speed levers in the center, has never developed any great amount of enthusiasm for her invention, according to *The Motor*. It is true that on all the Paris omnibuses the driver sits on the left-hand side of his vehicle, and that the same position is occupied by the drivers of about 40 per cent. of the Paris taxicabs. Beyond this the movement has not spread. The public has shown so little enthusiasm for the change of position that only three French manufacturers—Charron, Clement-Bayard, and Alda—have made it optional on their touring models. Probably the left-hand position does not find a place on more than 15 or 20 per cent. of the output of the respective firms mentioned.

Left-hand steering is a failure so far as France is concerned. It must be admitted that under the dense traffic conditions prevailing in Paris there is a certain advantage in having the driver on the left-hand side of his car.

In America, where a certain amount of enthusiasm has been stirred up in left-hand control, many claims are put forth, among them being the advantage of allowing the front passenger to step directly on to the footpath. This does not touch European drivers, for it is only in American cities that the

police insist on cars being stopped with their bonnets pointing in the direction of the stream of traffic. When you have been hauled out of office or club by a rough member of the traffic squad and made to turn your car round in the direction of all other vehicles you are not likely to forget the rule of the road, and may appreciate the advantage of being able to set your companion down directly on to the footpath.

Perhaps one of the main reasons why America has become enthusiastic over left-hand steering, while other countries having the same rule of the road have been indifferent to the change, is that there are manufacturing advantages in being able to place the two levers in the center. This saving of material and economy in fitting is a matter of some importance where huge series of cars are produced under the most economical conditions. In recent conversation with the production engineer of an American factory having one of the largest outputs in the world, the opinion was finally elicited that the saving of a couple of shillings per car was the most important advantage of left-hand steering. This engineer had driven with right-hand steering and control, left-hand steering and center control, and left-hand steering and left-hand levers, and could not find any distinct advantage in one system over the others. Cost of production outweighed everything. Obviously this and similar concerns will have to make two types of cars if they wish to supply the English market. The same applies to a limited extent to the Continental market, unless, of course, they are prepared to convert the Continentals to their way of thinking.

## SEEKING NEW FUEL—NAPHTHALINE

The use of naphthaline as an alternative fuel for engines presents, on account of its solidified state, some difficulties. A recent invention now claims to overcome the difficulties. The use of white naphthaline does not present considerable advantage over gasoline on account of its high price, but it is otherwise with the crude. Its low price permits of its use as a cheap fuel. Naphthaline is a by-product of coal tar. It is not largely employed, and used only to replace sulphite of copper for the treatment of railway sleepers, and considering that millions of kilos are produced annually, there is no danger of it falling into speculators' hands and raising the price. The apparatus to utilize naphthaline was invented by Leon Noel, an Englishman, and can be used on all motors working on gasoline, paraffin and ordinary gas. It is very simple, and its dimensions are moderate.

It consists of a receptacle fitted on the dashboard of the car containing the crude naphthaline, which is liquefied by means of the hot exhaust gases, which are conducted through pipes located in the said receptacle. A special type of carburetor for use with the naphthaline is connected with this receptacle, a filter being fitted to take up the impurities before reaching the carburetor. Another carburetor for gasoline is connected with the first one, as gasoline is used for starting the engine to enable the naphthaline to be heated by the exhaust gases.

The two carburetors, one for gasoline and one for naphthaline, are connected with the same mixing chamber, no valve being interposed. The inclined position of the two jets prevents the choking of the jets, which can be provoked by an excess of fuel, when the motor is running slowly. In this case the naphthaline can flow easily in the space formed between the two jets.

Exhaustive trials have been made, and appended are the results of a few of them:

The first trial was made on a motor with two cylinders working on crude naphthaline.

Bore of cylinders, 95 mm.

Stroke, 140 mm.

Coupled to a continuous current dynamo.

Speed of motor, 1,200 r.p.m.

Horsepower of motor, 12.3 h.p.

Total consumption of naphthaline, 4 kg. 35.  
 Consumption per h.p. and per hour, 354 grams.  
 Price of crude naphthaline per 100 kgs., 5 to 6 francs.  
 Price per h.p. per hour, 2.14 centimes.

#### Trial on Half Charge

Horsepower, 6.55 h.p.  
 Consumption per hour, 4 kg. 05.

Per h.p. and per hour  $\frac{4.05}{6.55} = 0.620$  kg.

Price per horsepower and per hour  $0.620 \times 0.06 = 3.7$  centimes.

This trial was made with the same jet as in the previous trial, consequently there was excess of fuel without interfering with the working of the motor when it was put on full charge again.

These trials were carried on for 15 days, for five hours per day. Minute inspection of the motor has shown no carbonization or oxidization of the parts exposed to the heat of the explosions.

### AUTOMOBILE INDUSTRY FED ON WEIRD "DOPE"

Half-baked statistics are the bane of the automobile press. Statistics are like oysters. If they are sound and sweet, they are about the best things on this mundane sphere. If, on the contrary, they are not first rate, they are beneath notice. One decadent oyster will spoil the finest stew, and one set of inaccurate figures will vitiate the whole effect of such a studious article as appeared recently in the leading position of the foremost technical 'automobile journal.

The blunders into which the publication fell are so palpable and so unjust in their effect that the effect of whatever good was contained in other portions of the effort was entirely lost.

Just why such mistakes can happen is a mystery, but here is what appeared:

Among other tabulations showing the size and scope of automobile use in the United States, there is one that attempts to show the number of cars owned in the various states for each 1,000 of population and the number of persons residing in the various states for each car owned in those states.

It would seem like a simple little sum in division, repeated as many times as there are states, but the results are laughable.

For instance, the great state of California is said to have 3.94 automobiles for each 1,000 of population, and the next column shows that there are 254 people living in California for each automobile owned in the state.

According to the 1910 Federal census, California had 2,377,549 inhabitants. If there are 3.94 automobiles owned in the state for each 1,000 population, there are only 9,364 automobiles in California. If, on the other hand, there are 254 persons for each automobile, the population of the state must be 22,529,546, because in another table we learn that there are 88,699 automobiles in the state and not 9,364.

Of course, both statements are incorrect. California has 88,699 automobiles, and its population is about 2,377,549. Consequently, it ranks first in the list of states in the distribution figures. A simple division shows that there is one automobile owned in California for each 264/5 of population.

The unfortunate mistake with reference to California is only one of the numerous blunders that appears in the article.

For instance, the tabulation gravely states that the District of Columbia, one of the most popular motoring centers of the country, has but one automobile for every 278 of population. The number of automobiles at the capital is placed at 11,902. A simple calculation shows that if the figures are correct, the city of Washington and its environs must contain 3,308,756 population. The latest census gives the District of Columbia about one-tenth of that number.

Again, in the Connecticut figures, something fails to jibe. The state is credited with having 17,950 automobiles, and the

tabulation says that there is one for each 151 of population. This means that if the figures are correct, the little Nutmeg State has a population of 2,700,450, or approximately the same as Michigan and more than New Jersey. The census figures do not agree with the conclusions of the editor of the "leading automobile journal," for they only credit Connecticut with 1,114,756.

A superficial survey of the article shows that there are at least forty palpable, foolish blunders contained in it, and it is this sort of stuff that the automobile industry accepts from its accredited organ.—Rider and Driver.

### SOME HALF FORGOTTEN VARNISH FACTS

The chief distinction between spirit varnishes and those made with oil of turpentine lies in the fact that spirit varnishes are injured by being kept a long time, while those made with oil of turpentine are improved by keeping, a more intimate union taking place in time between the resins and the oil.

Linseed oil varnish must be clear, and must neither display turbidity or have any solid bodies in suspension. Leaving it at rest fourteen days in a moderately warm place will clarify it unless it has been adulterated with oil of resin. A slight amount of sediment (under ¼ per cent. after months) is deposited even by the best varnish, but when other than pure varnish is sent out after insufficient clarification, there is often a deposit amounting to 7 per cent.

The color of linseed oil varnish depends on the manner of its preparation, and should be light to brownish yellow (sometimes reddish brown), but never dark brown or blackish brown. Steam varnishes are generally lighter in color than those prepared by direct fire.

To make shellac varnish, either white or orange, take proof com. alcohol and in it dissolve the gum shellac—3½ lbs. per gallon. Put the alcohol and shellac in a wooden, glass or earthenware vessel, and agitate until dissolved. A tin or iron vessel darkens the shellac by its chemical action on the metal. White shellac will not turn any wood yellow or any other color. It will, however, darken slightly with age. White wood it not white; it is naturally yellow. The shellac will bring this out, just as wetting the wood would do.

The drying of varnish is one of its most important characteristics. It must, after 24 hours, have dried sufficiently in thin layers on wood, glass, or metal to have a thorough adhesion, and must within the ensuing 24 hours have entirely dried, without, however, losing a certain elasticity and softness. If it dries more quickly no effect is thereby indicated, but if it dries more slowly it is evident that it was not sufficiently boiled, that an insufficient quantity of drying agents was added during the boiling, or that it contains foreign substances.

A black varnish is often required for metal work, and as this varnish may be too bright in its surface, a dull varnish may be prepared by adding fine lampblack to brown spirit varnish in sufficient quantity to produce the necessary black surface. The varnish, if necessary, may be thinned by the addition of more spirit previous to adding the lampblack.

A very hard and slow drying varnish is obtained as follows: Mastic in tears, 2 oz.; sandarach, 2 oz.; copal, 1 oz.; spirit, 1 pint; spike oil, 1½ oz. All these ingredients may be more or less varied, according to taste. The varnishes may be perfumed by the aid of a few drops of aromatic balsam.

A German has patented a formula for producing varnish from linseed oil by means of an electric current. The oil, after being purified in a proper manner, is thoroughly mixed and agitated with sulphuric acid and water, and subjected to the

action of an electric current for two or three hours, so that the oxygen produced in the nascent state by the passage of the current converts the oil into varnish. The varnish so produced is said to be almost colorless and perfectly free from mineral or metallic admixtures or impurities.

A simple, quick and effective way to remove freshly laid on varnish from a panel when through some accident the varnish goes wrong, runs intrude themselves, or dirt specks blossom forth too prominently, is to take a fairly stiff brush—a badger hair brush will do—and dipping it into turpentine, thoroughly saturate the varnished panel. The turps will quickly soften up the varnish so that with downward strokes of the brush it can be easily removed, and the surface immediately revarnished. This is a clean method and does away entirely with the use of waste, cloth and other soft textured material.

### CONSOLIDATED SOUGHT TO SEIZE GOODRICH STOCK

The Consolidated Rubber Tire Co., owners of the Grant imbedded wire patent No. 554,675, which expired on February 18, began action against the new B. F. Goodrich Co. in the United States District Court for the Southern District of New York, asking that some 300,000 pounds of tires, alleged to be held in stock by the new B. F. Goodrich Co. at its factories, be seized and held for an accounting on the grounds that the tires were manufactured prior to the expiration of the patent, which has been held valid by the courts. These tires were said to be worth \$120,000.

Judge Coxe, who heard the motions on these points in the United States District Court for the Southern District of New York, declared that the Consolidated company, in its requests for the seizure of tires in other circuits was in the wrong court and that what relief it asked could well be secured in suits of other form and in other circuits, which suits the Consolidated's attorneys state will be brought.

This motion was part of the Consolidated's suit against the Diamond Rubber Co. of New York which was filed in 1907 and part of litigation that has filled the volumes in the United States District, Circuit and Supreme courts for nearly fifteen years. The immediate status of affair may be briefly explained by the statement that the Consolidated's suit against the New York Diamond company resulted in a victory for the former in every court and the action now has been in the accounting stage for about a year, which is to say that the machinery of the courts is being used to determine how much the Diamond owes the Consolidated because of manufacture and sale of infringing tires prior to the injunction which stopped sales.

Since the Goodrich company bought the Diamond company, and with it the New York Diamond company, the motion also asked that the new and larger Goodrich company, B. G. Work, its president; Arthur H. Marks, president of the old Diamond company; William B. Miller, former Diamond secretary, and Andrew H. Noah, vice-president of the old Diamond company, be made parties in the defense.

The Consolidated, which is now known as the Kelly-Springfield Tire Co., won its infringement suits all along the line, and of the defendants the Hartford, Morgan & Wright and Firestone companies have made settlement. In the accounting stage are judgments against the Pennsylvania Rubber Co., the Thermoid Rubber Co. and the Rutherford Rubber Co.

An additional new feature in the litigation consists of two decisions in favor of the Consolidated interests rendered in the United States Circuit Court of Appeals in Chicago, February 7. Despite the many previous decisions in favor of the Grant patent, Judge Kohlsaat, of the District Court, had thrown both cases out of court as devoid of equity and the Appellate Court as promptly overthrew these decisions from the bench, ordering a mandate down to the lower court immediately, whereas the usual order is to permit thirty days to elapse, granted an injunction and ordering an accounting for

the Consolidated. The defendants in these two actions were the B. F. Goodrich Co., of Akron, Ohio, and the Republic Rubber Co., of Youngstown, Ohio.

### ESSENCE OF THE LA FRANCE

At the recent New York Automobile Show attention was attracted to the application of hydraulic transmission to motor trucks, as exemplified in the LaFrance truck. The medium can be water, oil, etc. The gasoline engine is directly connected to a pump which forces oil to two oil motors, each oil motor being connected to one of the rear wheels by a chain.

The speed of the truck is changed by changing the stroke of the pump. With the pump running at full length of stroke the maximum quantity of oil is forced to the motors and the truck runs at a maximum speed. A reduced stroke of the pump forces a reduced amount of oil to the motors, driving the truck at a proportionately lower speed. Thus the power is multiplied and a very small stroke gives what is practically a hydraulic jack.

One of the advantages of hydraulic transmission naturally follows: the maximum tractive effort or draw bar pull is reached and maintained at starting and at low speeds. It takes more force to start a heavy load than it does to keep it moving. Only one lever controls the entire truck. It regulates the stroke of the pump. Pushing this lever forward increases the stroke and makes the truck move forward. Moving this lever backward makes the truck move backward. When it is in central position the pump has no stroke, the oil motors are locked, the wheels cannot be turned even with a crowbar, and the result is a power brake. Because of this simplicity of control an experienced chauffeur is not required to operate it.

The LaFrance hydraulic truck is built by the American LaFrance Fire Engine Company, who have had over fifty years' experience building heavy rolling stock. The gasoline engine used in the LaFrance truck has been built by them for over eight years for fire engine work. This company builds no pleasure cars. They have never built anything but heavy rolling stock. There is probably nothing on wheels that must stand the hard usage a fire engine stands. An organization that has built fire apparatus successfully for this length of time must know how to build an automobile truck that will consistently stand up.

### PLACING THE RADIATOR IN THE FLYWHEEL

Roumanian engineer has devised a radiator for automobile engines which is located in the flywheel. The flywheel is cast hollow with a tapering projection on the front. Pipes leading to and from the water jacket are connected up to a funnel attachment surrounding the flywheel. One of these pipes discharges water into the bottom side of the funnel, the flywheel catches and carries the water around, and the second pipe, provided with a flared end, collects the water distributed around the hollow channel of the flywheel by its motion and returns it to the jacket. The water trickling into the funnel from the first mentioned pipe is said to be reduced to the proper temperature for return to the jacket by the cooling effects of the air movement set up by the whirling of the flywheel.

### GOODYEAR BUYS CONTROL OF FABRIC MILL

Interests representing the Goodyear Tire & Rubber Co., of Akron, Ohio, have purchased the controlling interest in the Killingly Mfg. Co., of Williamsville, Conn., which manufactures tire fabrics among other cotton goods. Following the acquirement, new officers for the Killingly Company were elected, as follows: President, Benjamin F. Smith, of the B. F. Smith Construction Co., of Pawtucket, R. I.; treasurer, W. E. Palmer, of Akron, Ohio; vice-president and assistant treasurer, W. Irving Bullard, of Danielson.

# What the Painter Should Know About Colors

A color expert treats interestingly and at length about harmony of color. This is something the carriage body painter is up against all the time unless he is just a copyist. If he is seeking for new and pleasing effects he must have some knowledge of the law to guide him. A few words on this subject will supply food for a deal of thought and experiment. He says on the subject that perhaps the most difficult subject to teach is that of color harmony. The subject is too comprehensive for treatment here, and I freely admit that I am not able to do justice to it. It is a natural gift, just as some people have an ear quick to recognize the slightest discord, so some are fortunate enough to possess an inborn talent for conceiving and recognizing good color combination. The musical ear is fairly common, but the ability to harmonize colors is very rare. Harmony of color in the strictest sense exists only between various degrees of luminosity of the same color. That is, the pure color either diluted with white or subdued with neutral grey, such as red, pink and maroon, orange terra cotta and cream color; ultramarine, navy blue, sky blue, and so forth. Various tints of blue in combination with pure blue will always produce pleasing effects. This same rule will apply to any pure color. Black does not form a very pleasing combination with any of the subdued shades, nor with the cold colors, such as blue, violet or green, but will harmonize nicely with any of the brighter or warm colors. Thus we have one rule that we can always keep in mind and follow safely to with.

Black will always harmonize with bright or warm colors. Black or grey placed near another color has the effect of making that color brighter and clearer; while white has just the opposite effect, as it lessens the apparent brilliancy of the color against which it is placed.

If grey is introduced in any combination of colors, it should incline to the hue of the most prominent of these colors. For instance, in a combination of red and maroon it would be a mistake to introduce a bluish or cold grey, while a reddish or warm grey will harmonize agreeably. Neutral grey, like black, will harmonize with any color, although with cold colors it will not produce such pleasing combinations as with warm ones.

When warm and cold colors are used together, they are said to be in contrast; contrast colors, for instance, are: red and green, red and blue, blue and orange, crimson and violet. Crimson and violet form the strongest contrast, being respectively the most and the least luminous colors.

It must be borne in mind that, as in the matter of food, we have our individual tastes, our personal likes and dislikes, so it is with color combinations. Thus a combination that strikes one person as being pretty will arouse aversion in another. It is recommended, therefore, in studying color combinations that the various effects, by changing the positions of the colors to form various combinations be carefully studied; and at the same time the relative quantities of the colors should be changed, and the differences noted—for the character of a combination may be materially influenced by a predominance of one color. For instance, a small quantity of green or blue would look bad with a large quantity of black, but a large quantity of green or blue would look very pleasing when combined with a small quantity of black.

As mentioned above, a change in either the shade or brightness of one or other of the colors forming a combination, may improve the effect. If we have, for instance, a certain shade of red, in a combination of colors, this red might be changed to either a more orange or a more crimson hue, or could be reduced to more or less of a pink tint, or its brightness might be subdued to a maroon or wine color. This change in the

shade or luminosity need not necessarily be very great to improve the effect of the combination.

The student should study nature's color combination, particularly of landscapes in summer, of sunsets and sunrises, the combinations of colors in flowers, butterflies and other subjects in nature. We are so used from our childhood to the combinations we see around us in nature, that the eye is pleasantly affected by them; therefore, with very few exceptions, we can take nature as a guide and study her combinations of color with profit.

## WHAT IS CHINA WOOD OIL?

In seeking out matters of general interest to the master painter, writes M. Sims in *The Decorator*, I obtained very reliable information in regard to the origin, cultivation and production in a marketable shape of the above-named article from a copy of the report on the tung shu, or wood oil tree. As to the value and extent of its use in the manufacture of paints and varnishes, I can only speak from the standpoint or view of one concern, and say that we have found the tung shu, or Chinese wood oil, very valuable for many purposes when properly treated and combined with other materials used in paint and varnish manufacturing. Wood oil was first used in this country in 1896, and in an experimental way as far back as 1895.

The tung shu, or wood oil tree, has been styled "the national tree of China," from its stately appearance, green, smooth bark, and spreading branches, which make it one of the finest of shade trees. It has many local names in the various provinces and localities in which it grows, but the botanical name of the tree is "*Aleurites Cordota*."

The tung shu flourishes to a greater or less extent in every province in China that is located in the Yangtse valley. Its longitude in China is from the coast to near the western part of the province of Saychuen. This territory includes an area of over 750,000 square miles, being over 600 miles north and south, and 1,250 miles east and west. While this tree grows as far north as 34 degrees, and perhaps farther, these higher latitudes (as far as I know) are sheltered by mountain ranges on the north, so that it is hardly probable that these trees would bear nuts farther north in the United States than northern Georgia or Alabama, unless under favorable circumstances. Some say these trees will flourish in a climate where it is 20 degrees above zero, and will not be injured, except that they are liable to injury the first year. While it is true the tree may grow in a colder climate, yet it will not bear any nuts. The seeds of the wood oil tree have been sent to central California, and have grown well, yet reports from those planted at South Bend, Ind., show that they have not sprouted. This may be due to the seed, and other seeds might grow in Indiana, but they would probably fail to produce nuts.

The age when the tree begins to bear depends to a considerable extent in the richness of the soil and the amount of moisture it received the first few years after planting. In some localities it produces fruit in three years; usually from the fourth to the sixth year. It then continues to bear for about ten years, when new trees are planted. If properly attended to and pruned, it would no doubt retain its productiveness for more than ten years.

The nuts from the tung shu tree ripen about the first of October. The Chinese name for this is "ying tsi tung," from their resemblance to a jar, being flat at the top and bottom. They resemble very much a large shell bark hickory nut. When they are ripe they burst open, especially if there is a frost. When they are dry they measure from five and one-half to

six and one-half inches in circumference. The shell or husk is composed of five segments; where the segment joins there is a line of depression running from stem to point of husk. The husk in its dry state is about one-eighth of an inch thick at its base, and one-sixteenth of an inch thick at its apex. The measurements apply only to the nuts after they have been thoroughly seasoned. When they are gathered they are the size of a small orange. The nuts are gathered in the fall. Those that fall to the ground often burst open and one or more of the seeds fall out. The inside of the husk has three fibrous partitions, which divide the inside of the husk into three cells. Each of these cells has a seed which furnishes the oil. These seeds resemble somewhat the triangular Brazil nut in shape and color, but are much smaller, being about seven-eighths of an inch in length and two and one-half inches in circumference. The shell of the seed is slightly thinner and the meat of the nut is similar to that of the Brazil nut. When the nuts are gathered and dried they are put in a large iron pan (called "kwo") about two feet in diameter, and stirred over a good fire until parched, being heated from 180 to 200 degrees. This causes the husk to open, and the seeds remaining in the husks are easily extracted. The seeds are then ground into a fine meal by hand or by rollers. The most usual way of doing this, I am informed, is a stone trough several inches wide, made in sections long enough to form a circle several feet in diameter. The nuts are placed in this trough and a heavy stone roller is then used to grind them to meal. This roller is turned by a water buffalo, cow, or ass. The meal is collected and put into a press somewhat similar to an old-fashioned press used to press the cider out of apples after they have been ground. Dedges are driven in to increase the power of the press, and heavy stones are used on the top of the press to make it more effective. Steaming the meal before it is put into the press is practiced by the natives in order to extract the oil more easily. The oil is collected in vessels as it comes from the press. It is then heated (if the weather is cold it thickens and congeals) and freed from the sediment by being strained through coarse grasscloth, and is then ready for market. The oil is of a light straw color; if boiled it becomes dark brown.

This oil is extremely poisonous when wet. A simple native remedy is to boil a quantity of pine shavings in water and bathe the poisoned parts repeatedly. It gives immediate relief and cures rapidly. The curious aspects of wood oil poisoning are worthy of special study.

The refuse of the wood oil nut is used as a fertilizer, or after the oil is extracted from the seed the meal is burned to a fine ash or soot, and this is then taken and rubbed with wood oil to make a paste or chuman, and is then used as a kind of cement for calking the seams of the native boats, especially on the decks. It is also commonly used in preparing floors for the first coat of paint. From the soot so-called "Chinese" or "Indian" ink is made.

### HARDWOOD MANUFACTURERS' ASSOCIATION HOLDS ANNUAL MEETING

The Hardwood Manufacturers' Association held its annual meeting in Cincinnati during the early part of February, when the following officers were elected: President, W. E. DeLaney, Cincinnati; first vice-president, J. H. Himmelberger, Cape Girardeau, Mo.; second vice-president, B. B. Burns, Huntington, W. Va.; treasurer, C. M. Crawford, Coal Grove, O.

Two local men, Clinton Crane and E. O. Robinson, were put on the Executive Board. Other members are: W. E. DeLaney, Cincinnati; J. H. Himmelberger, Cape Girardeau, Mo.; B. B. Burns, Huntington, W. V.; C. M. Crawford, Coal Grove, O.; W. B. Burke, Charleston, Miss.; R. M. Carrier, Sardis, Miss.; W. H. Dawkins, Ashland, Ky.; Frank F. Fee, Dermott, Ark.; W. A. Gilchrist, Memphis, Tenn.; E. A. Lang, Chicago; J. K. Oakford, Scranton, Pa.; A. B. Ransom, Nashville, Tenn.; W. B. Townsend, Townsend, Tenn.; R. H. Van

Sant, Ashland, Ky.; W. M. Ritter, Columbus, O.; E. M. Vestal, Knoxville, Tenn., and E. B. Norman, Louisville, Ky.

An immense amount of business was transacted by the delegates. It was estimated the last night that more than 6,000,000 feet of lumber was solicited for sale, and that about 3,000,000 feet were sold.

Selection of the next meeting was left to the Executive Board. A resolution was adopted approving the past accomplishments of the Federal Forestry Department Service of the Department of Agriculture, especially mentioning the fight of that department against insect devastation of trees, and the organized effort to control the chestnut tree blight.

The men who comprise the Hardwood Manufacturers' Association of the United States represent an important portion of the vast resources of our country, with values running into billions of dollars annually. The country over, including all kinds of woods standing, has forests of 550,000,000 acres, of which four-fifths is privately owned, mostly in the hands of great corporations, and one-fifth is publicly owned. The standing timber is made to yield at the rate of about 20,000,000,000 cubic feet per annum, at an estimated valuation of \$1,250,000,000. Unfortunately, this means that we are cutting each year three times the annual growth of the forests—a condition that is hoped to be remedied in some future time by such means of conservation as have been enforced in some European countries, notably Germany and France.

### THE ST. LOUIS C. B. N. A. CONVENTION

The Planters' Hotel has been selected as official headquarters for the forty-first annual convention of the Carriage Builders' National Association, which meets in St. Louis the week of October 12. The new coliseum will house the big exhibition of vehicle parts and accessories and furnish accommodations for the business meetings.

In addition to the Planters', St. Louis boasts of a number of other first-class hotels as well as many excellent smaller houses.

At St. Louis are located the Banner Buggy Co., Regal Buggy Co., Manley Carriage Co., Moon Bros., Cook Carriage Co., Mound City Buggy Co., Ropp & Moller Carriage Co., Louis Werner, besides many others in the buggy and carriage business, to say nothing of the large number of manufacturers of accessory goods. St. Louis is also a large manufacturing and jobbing center for harness and saddlery goods.

At the regular monthly meeting of the Implement, Vehicle and Hardware Association, held at the Mercantile Club, St. Louis, February 10, it was decided to start a more aggressive campaign to give the members of the Carriage Builders' National Association the time of their lives next fall. A vigorous effort to get new members to join the local association has been started by W. H. Roninger, chairman of the C. B. N. A. committee. In order to enable outside members to come into the association some slight changes are being made in the by-laws of the association. This matter is now in the hands of the legislative committee of the association.

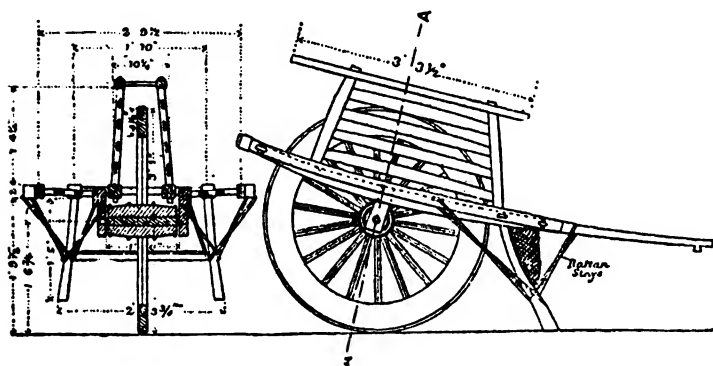
### NEW SECRETARY FOR PEORIA SHOW

W. O. Ireland has been appointed secretary of the National Implement and Vehicle Show, Peoria, Ill., succeeding Willis Evans, who has acted as secretary for the past year. Mr. Evans' duties as secretary of the Association of Commerce prevented him from giving the necessary time to the exposition. Mr. Ireland is a well known implement man. He will devote his entire time to the National Implement and Vehicle Show. The show company has taken over the membership of the Peoria Trotting Association in the Great Western circuit, with a view to putting on horse racing as one of the attractions at the next exhibition. The dates for the 1913 show have not been chosen, but it is probable that the event will take place the latter part of September.



# The Chinese Wheelbarrow

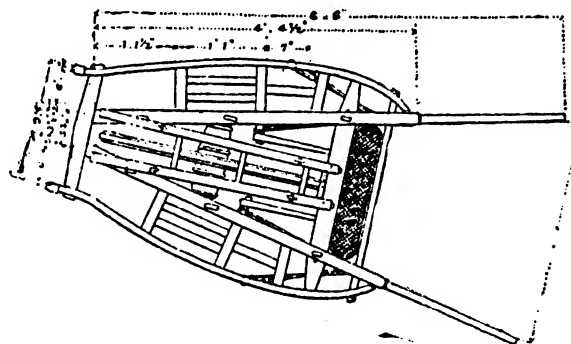
The wheelbarrow affords one of the chief means of travel and transport in China, especially in the northern part of the empire and throughout the Great Plain. The Chinese form is a decided improvement on the types used in western countries, for it is so constructed that the load, which sometimes is very great in bulk and weight, is carried over the wheel, and not between it and the man who propels it. The high cost of timber and the bad roads throughout the country necessitate the wheelbarrows being both rude and strong, with axles and wheels able to bear the strains which they experience. The wheelbarrow is generally constructed of oak, at a cost of about



16 shillings. Its weight is 120 pounds; extreme length, 6 feet 6 inches (including shafts); extreme breadth, 3 feet 2 inches, and height, 3 feet 6 inches. The wheel is 3 feet in diameter, and has an iron tire  $1\frac{1}{4}$  inches wide by  $\frac{1}{4}$  inch thick. To aid in steadying and propelling the vehicle, the wheelbarrow man wears a strap across his shoulders, which is attached to the shafts on each side. Boxes, bales of goods, or whatever the loads may consist of, are secured to the wheelbarrow by ropes. The charge for carrying an average load is about 1 shilling and 5 pence per mile, but varies according to the load and the state of the road to be traveled over. The wheelbarrow has seating accommodations for four people, two on each side, and the fare for four people is  $2\frac{1}{4}$  pence per mile. Passenger fares are lower than those for merchandise on account of the avoidance of labor in loading and unloading. A cushioned seat is provided for the passenger, who generally sits with one leg resting on the front of the barrow and the other hanging over the side in a rope loop, which serves as a foot rest. Thus a native is wheeled for miles over the rough roads of the country, with severe jolting, accompanied by a peculiar squeak of the axle in the case of most barrows. Immediately behind the wheelbarrow, between the shafts, there is a long oblong-shaped basket, in which the wheelbarrow man keeps his few belongings. On the Great Plain wheelbarrows are occasionally seen with a sail set, when a fair wind proves to be a great help to the trundling of the barrow over the level way.

Since the institution of cotton mills at Shanghai (foreign settlements), the wheelbarrow has been extensively used as a passenger vehicle, especially for carrying workwomen to and from the mills. One man can wheel six women for a distance of about three miles, morning and evening, the charge being 1 shilling and 5 pence per month. The average earnings of a wheelbarrow man are about  $8\frac{1}{2}$  pence per day. About 4,000 licenses are issued monthly to the same number of wheelbarrows plying for hire in the streets of the foreign settlements at Shanghai, where, being under the municipal regulations, they are, perhaps, the best in China. The fee for a license is  $11\frac{1}{2}$  pence a month, and no wheelbarrow is allowed, according to

the regulations, to carry more than six and one-half chests of tea, or eight and one-half boxes of kerosene oil, or twenty and one-half boxes of soap (30 pounds each), or ten boxes of soap (52 pounds each), or two bales of American piece goods. The width of the packages must not exceed four feet—that is, two feet on each side of the barrow—and no wheelbarrow is allowed under any circumstances to carry more than 600 pounds of dead weight. These regulations are, however, not strictly adhered to. Sometimes in the streets of the foreign settlements at Shanghai about 50 wheelbarrows may be seen traveling one behind the other, each carrying two barrels of Portland cement and pushed by one man. Very frequently a load is carried on one side of the barrow only, so that the edge of the  $1\frac{1}{4}$ -inch tire cuts into the macadam roadway like a knife. The bales sometimes project three feet on each side, the man pushing the barrow being almost invisible from the front. The municipal roads are chiefly of macadam, and the damage they sustain from this traffic is very great. It has been found, after repeated experiments, that granite broken to pass through a  $\frac{3}{4}$ -inch ring, and rolled in the usual manner, is the only kind of macadam roadway that will stand this severe traffic. It is



extraordinary to see a Chinaman skillfully balancing and propelling a heavy load on one side of a barrow, and, considering that there are about 4,000 of these vehicles traveling through the streets of the settlements in addition to a large traffic of other kinds, the upsets and accidents are remarkably few.

## NEARLY DOUBLES ITS SALES

"Goodyear sales for the year 1912 approximated \$25,000,000, which came near to doubling the sales of 1911," says F. A. Seiberling, president of the Goodyear Tire and Rubber Co. "For several years past, each year has shown a doubled output. It is fair to suppose that this is going to continue. We have twice as many users as two years ago. Contracts from makers are larger than ever before and this means two million tires next year, enough to equip 500,000 cars."

## SECURE A SEAT FOR THE RACES

Considerable interest will be added to the American 500-mile race to be held on the Speedway at Indianapolis, on May 30, by the decision of the Peugeot Co. to take part in this event. It has already been announced that the six-cylinder Sunbeam, holding world's records on Brooklands track, will be handed over to Albert Guyot, to be driven by him in America. Although an official entry of the English car has not yet been made, its participation in the great American race can be looked upon as certain. For a long time the directors of the Peugeot Co. have had under consideration the possibility of sending

two or three of their last year's racers across the Atlantic. The near approach of the French Grand Prix, and the fact that the cars would have to be slightly decreased in bore in order to comply with the American regulations, caused them to hesitate. It has now been decided to alter two of the cars, giving them a cylinder area of 450 cubic inches, and to send them to America with Jules Goux and M. Zuccarelli as drivers. The two Peugeots and the Sunbeam will doubtless be the only European cars in the race, for the list of starters is limited to 30, and a large number of American factories are anxious to put in teams.

### INTERESTING EXPERIMENTS WITH ENGINE STARTERS

In view of the interest taken in self-starters, I have been carrying out personal trials with various makes, says S. F. Edge, an English automobile engineer of note. There are five principal types:

1. Compressed air with a compressor, air container, distributor valve, and all the necessary adjuncts made as part and parcel of the car when designed, with pressure up to 500 pounds per square inch.

2. Spring type which automatically rewinds itself once the motor is started.

3. Compressed air type combined with carburetted air, with pressure up to, say, 100 or 150 pounds.

4. Acetylene gas type, admitting compressed acetylene gas to the cylinders which, forming an explosive mixture with air, is afterwards ignited by a spark from coil or magneto.

5. Electric self-starter, consisting of small electric motor actuated by battery of accumulators.

These five devices seem to cover those which may be considered in the practical way today. All of them have disadvantages, some more, some less. None of them would give satisfaction after a year's use, and all of them require a considerable amount of care and intelligence to keep them working properly, and as a whole their disadvantages are infinitely greater than their advantages, but one cannot help recognizing that the day must come when engines will be automatically started from the seat with certainty, without material expense or weight being added to the car, and without such complications as at present exist, which almost requires a specially trained man to keep them in order, with the little incidents which seem to occur.

Practically all these devices have shown that from a demonstration point of view they will start a car certainly and successfully hundreds of times a day, and keep on doing it, but that is quite another story to wanting them to start your car when it has been standing for some time, and would possibly have been exceedingly difficult to start by hand with a starting handle. It is under these circumstances that it behaves badly.

Now to deal with the disadvantages of the various types:

1. Compressed air type—The disadvantages are excessive weight and expense. The workmanship has to be absolutely perfect, and even then it will require a skilled person to keep the installation in order.

2. Spring type—This on the face of it is the simplest to operate, very certain in action when the engine is within its power to turn over, but once trouble does start—and owing to its great complications it is a certainty it will—only a very skilled mechanic will be able to put it into working order.

3. Compressed air type combined with carburetted air—This is excellent in many ways. The pressure is not very high, the installation is not so expensive as the others, but its disadvantage is that it requires a coil or special starting magneto to ignite the charge, and as the engine does not always stop in a suitable position for starting a certain percentage of times, it fails.

4. Acetylene type—Many look upon this only as a passing phase, as the use of compressed acetylene is illegal in some

countries, and there is no question it is dangerous. It also has the disadvantage of not always starting.

5. Electric self-starter—This on the face of it seems an ideal method of turning the engine round, but to turn over a big engine after standing all night in the cold requires a very large amount of power, and the installation is, in common with most of the others, heavy, and if installed in the best style, would apparently be expensive. This is a reasonable proposition for small engines providing the cost be not objected to, but when one remembers the trouble got into with accumulators when coil ignition was used, it can easily be realized what the state of this self-starter and its mechanism will be in after twelve months use with a large battery of accumulators to be kept in order.

### FRENCH AND SWISS HIDES LARGELY USED IN AUTOMOBILE LEATHER MANUFACTURE

The increasing demand for automobile leather has made a vast difference in the usages of leather. Experts say that it takes three whole hides measuring 60 feet to the hide for one automobile, making 180 feet to each automobile. The western states are enjoying great prosperity, making a big demand for machines, which, in turn, is giving a large output for leather manufactured by Newark, N. J., concerns.

French and Swiss hides are largely used for automobile and furniture leather, the grains measuring on the average of 65 feet. The average measurement of the best type of American hides from the packers is 55 feet. It costs but little more to tan and finish the larger French hides than it does the 55-foot American hides. As far as the freight is concerned on the imported hides from France to Newark, N. J., it costs about the same from the western states to that city. Newark has always been the home for high-class carriage and furniture leather.

The working of the hides is thorough and is accomplished mostly by hand. The hides are soaked until fairly softened and then broken over a beam, after which they are returned to the soaks. After soaking, they are carefully placed in the lime pits and thoroughly handled. The limes are strengthened in the same manner as a tanner would strengthen his bark liquors, and the hides hauled every day. After liming, the hides are placed in warm water and allowed to stay for a number of hours, when they are unhaired by hand. The warm water softens the hair roots, leaving the grain in a soft, silky condition, allowing the knife to work out all scud and filth. After being carefully unhaired, the whole hides are fleshed by hand. Here is where the workman makes or mars the split. A skillful workman will so flesh a hide as to break up all tissues and remove waste matter without breaking the veins. A green shaver can do no better work than many of these men who are experts in their line. After the hides are fleshed, they are placed in a drench made from bacterial matter which reduces the hide and makes the working-out easy. From here the hides are suspended in a weak oak bark liquor and then shifted to stronger liquors daily until struck through. After this they are rinsed in cold water and dried out.

The leather now is either hand-buffed or the buffing taken off by the use of the splitting machine. The grains are either used for automobile stock or furniture leather, and the splits put into colors and used for various purposes.

### LOZIER EX-LIEUTENANTS LAUNCH THE CHANDLER SIX

F. C. Chandler, C. A. Emise and Samuel Regar having severed their relations with the Lozier Motor Co., of Detroit, along with others who have joined with them, have organized the Chandler Motor Car Co., with an authorized capital of \$425,000. The new company will be located temporarily at 925 Woodward avenue, in Detroit, but it is probable that it will establish itself permanently in Cleveland. At any rate it

will not become a Detroit industry. It will manufacture a light "six" listing at \$1,785, fully equipped. Deliveries will not be made until July 1 next.

F. C. Chandler, previously vice-president and general manager of the Lozier Company, is president of the company which bears his name; C. A. Emise, the former Lozier sales manager, is vice-president and sales manager of the Chandler corporation; Samuel Regar will be its treasurer, a position which he filled in the Lozier institution; W. S. M. Mead, former manager of the Lozier branch in New York, is secretary. J. V. Whitbeck, at one time Lozier's assistant chief engineer, who also has had experience in the Olds, Thomas and Franklin establishments, is chief engineer of the new enterprise, and J. R. Hall, who was superintendent of the Lozier service department, is the Chandler Company's superintendent and manager of production. All of the men were identified with the Lozier interests for periods ranging from eight to fourteen years, which implies that they not only know the automobile business intimately but know each other well.

The Chandler light "six," as the new car will be styled, is Whitbeck's creation. It closely resembles the Lozier light "six." It has the same stream-line body, the same square tube type of radiator, and also employs left side drive and center control. It has a wheelbase of 120 inches, 34 x 4 wheels fitted with demountable rims, a three-speed selective transmission of special design and unit construction, multiple disk clutch, 14-inch double expanding and fully enclosed brakes, floating rear axle, three-quarter elliptic rear springs and pressure fed gasoline supply contained in a tank suspended from the rear frame.

The Chandler motor is one of the car's most impressive features. It is of the L-head, pair-cast type and of remarkably clean design, no oil pipes, for instance, being visible. Its cylinder dimensions are  $3\frac{3}{8} \times 5$  inches, and at 1000 revolutions it develops 35 horsepower. The cam shaft, pump and magneto are driven by enclosed silent chains instead of gears. The valves also are enclosed.

It is not the purpose of the Chandler Company to make large physical investment in machinery and buildings. The engine and other parts will be built by specialists in the several fields, but according to specifications and under the supervision of Chandler experts. For the Chandler "six" will be a specially designed and specially built car and not merely an assembled machine.

## PRINCIPLES OF CARRIAGE CONSTRUCTION

In designing a carriage, a carriage builder has in many things to trust to his own perceptions, quickened by experience and trials, some of which have been successful, others not. Like an engine, a carriage is built to do certain work, but the carriage maker is at a disadvantage compared to an engine builder. The engineer can calculate accurately his load, and can mathematically determine dimensions and proportions of the various parts. He attains his object in a simple and straightforward manner, rejecting all conditions which do not give uniform strength and stiffness. The coach maker is never certain what his load will be, nor condition of roads, nor speed of travel, nor the excesses of strains by collisions, shying of horses, etc. He is therefore obliged to provide sufficient strength for all emergencies, and always err on the side of safety. In many respects the coach maker must abandon strictly scientific methods and appeal to art. He cannot reject curves, because beauty of outline and proportion are exacting requirements of a good carriage, and from the beginning he must calculate against future possibilities and draw a mental picture of the collective results of the whole.

Formerly the majority of carriages were built to order. Their purchasers gave the maker precise instructions as to what they wanted. With such data to guide him, the coach maker constructed very accurately designed carriages, strong, comfortable, highly finished, and adapted for the uses and needs of the

party ordering. Today the average carriage user selects a finished vehicle as it stands in the show room. It may be the shape of the body, or the color of the painting, or the style of the trimming which takes his eye and determines his selection. He is seldom, very seldom, a judge of quality.

The first thing that strikes us in comparing the carriage of today with the carriage of fifty years ago is the difference in size. The size has been continually reduced, and so has the weight. It follows that in reducing the dimensions and the substance of the materials of which carriages are constructed, we have in some degree impaired their durability, and have sacrificed a certain amount of comfort; but we have gained compensating advantages; our carriages being lighter than old time carriages, and drawn more quickly and with less expenditure of force, and do less injury to roads. They are more graceful in appearance, but vibration and speed must be taken in consideration.

## COLUMBUS BUGGY COMPANY DIFFICULTIES

Plans to reorganize the Columbus Buggy Company will wait on the report of the court appraisers and auditors who are making an examination of the property, according to a decision reached by the special committee of creditors. It is not expected the receiver will file a complete report with the court until the appraisers have concluded their work.

The determination of the special committee of creditors to await final and specific figures before beginning actual plans for a disposition of the business is based for the most part upon the showing already made through partial examinations. In this relation, it is said, the company has made profits so far as actual production and distribution is concerned, and in some branches of the business these profits have been large. The losses are said to have occurred through "milking" or draining the business of more than earnings justified. This is the opinion of members of the special creditors' committee, who, as a result of their inquiries into the affairs of the company, feel confident that, with complete reorganization and the elimination of past management and managing methods, the business could be made one of the most prosperous in Columbus.

The attorneys for the creditors say that C. D. Firestone, president of the company, owned over half of the common stock of the company, and received \$12,000 a year salary, besides dividends on his stock. Charles E. Firestone, secretary, and Joseph F. Firestone, manager of the company, each received \$10,000 a year, according to the attorneys, and it is said that E. L. Taylor, son-in-law of C. D. Firestone, received a fat retainer fee for his services as attorney for the company. It is also said that Mrs. N. F. Martin, a daughter of C. D. Firestone, received a considerable sum for services in a position which was made for her.

Receiver Daniel McLaren's report shows the actual assets of the plant, including building, machinery, etc., to be \$817,000, with liabilities of \$617,000.

Because of the fact that so much money is tied up in the plant and outstanding orders it was said that creditors could be paid 30 per cent. cash, or 75 per cent. in preferred stock of the new company, if organized.

The gasoline car has never been a paying proposition, but the losses in this branch are said to have been less than has been reported. On the other hand, the horse-drawn vehicle department has not paid so well as commonly supposed. The electric vehicles' business, according to those who have obtained considerable insight into the affairs of the company, has been very profitable. However, it is the belief of creditors, that the electric business could be made much more profitable. This, too, was the opinion expressed by Receiver Daniel McLaren. Several members of the creditors' committee are anxious to have the industry reorganized in a way that it may be continued and to this end are making plans to interest some new capital in the proposition.

## ANNUAL MEETING OF NEW YORK STATE DEALERS

The fourth annual convention of the New York Retail Implement and Vehicle Dealers' Association was held at Syracuse, N. Y., February 19 and 20. The attendance was not large, but it was representative, some of the best dealers in the state being present. After the convention a number of dealers departed for Lockport to attend the annual meeting of the Empire State Implement Men's Club, the traveling men's organization, which had arranged for a conference with the dealers.

In his annual address President Giddings called special attention to conditions in New York, arising from the sale of agricultural implements through farmer agents and blacksmiths who do not carry stocks of goods.

This subject was discussed at some length in the convention, and it was the opinion of all dealers present that the association should take steps to prevail upon manufacturers seeking an eastern market to recognize only the regular dealer, who is defined by the association as "one having a permanent place of business and carrying a stock commensurate with the requirements of the community in which he resides."

Dr. W. E. Taylor, Deere & Co.'s soil expert, was the principal speaker. He delivered his address on better farming and the interest of the dealers therein.

The following officers were chosen: President, F. D. Van Wagenen, Fulton; vice-president, Wm. Hirsch, Batavia; directors, D. D. Costello, North Manlius, and D. B. Grant, Cortland.

After adjournment the directors held a meeting and reappointed as secretary-treasurer, J. K. Henderson, of Preble, who has served in that capacity during the past year.

The location and dates for the next convention were referred to the new board of directors with power to act.

Plans for a mutual insurance service were discussed and a special committee appointed to investigate. This committee will report at a meeting of the board of directors to be held in the near future.

A complimentary banquet was tendered the visiting dealers, February 19, by the manufacturers' representatives in Syracuse territory. F. H. Ebeling, of Syracuse, was master of ceremonies. Short talks were made by C. D. Cover, of the Oliver Chilled Plow Works; Fred H. Bateman, of the Bateman Mfg. Co., Grenloch, N. J.; Dr. Taylor, of Deere & Co.; Grant Wright, and A. F. Spooner, former president of the association.

## AGREEMENT IN SETTLEMENT

A settlement has been agreed upon in the case brought by the Michigan City Trust and Savings Company against the Laporte Carriage Company in which litigation the local bank seeks to foreclose a bond issue. The matter was dismissed on agreement that the carriage company make settlement in full on matured bonds and interest, amounting to about \$8,000. If this settlement is not made by March 17 the bank will foreclose and the Laporte Company has agreed not to oppose the foreclosure proceedings.—Michigan City News.

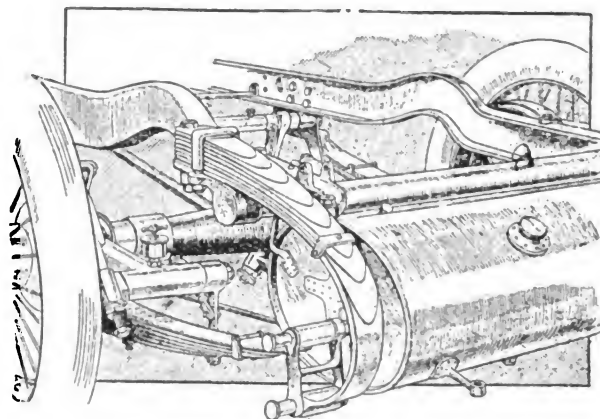
## ECONOMIZING THE MOTOR

That the automobile motor is a type of combustion motor in which a great sacrifice of economy has been made to the need for small size and small weight is demonstrated by nothing else so plainly as by the enormous development which has taken place in the past few years in combustion motors of great power operating with cheap heavy oil as fuel and using much less of substances per horsepower-hour than the automobile motor uses of gasoline. With the price of gasoline steadily rising, all developments of combustion motors which promise relief from the fuel problem step into the sphere of direct economical interest for users and makers of automobiles, and hereto comes the practical evidence which such developments afford of the perfectibility of the combustion motor in the

matter of design. It had scarcely been foreseen, for example, that it would be possible to operate heavy oil motors on the two-cycle principle, and reversible at that, with practically the same reliability and fuel economy as had been demonstrated in favor of the four-cycle and irreversible type. Yet no sooner had the time come when the impending expiration of the first Diesel patents opened the domain of experiment and manufacture to the industrial world at large, before these discoveries were made which at once placed the combustion motor in the front rank as a power producer.

## REAR SPRING CONSTRUCTION

The Daimler (English) works have the method shown of rear spring adjustment that is interesting. The body is seated



on rubber blocks on the frame to avoid rattle, and most of the vibration not taken up by springs. These are points that may be of interest to such builders as have not yet noted them.

## MOTOR TRANSPORTATION BUILDING FOR PANAMA-PACIFIC FAIR

The National Association of Automobile Manufacturers has decided to erect a motor transportation building on the grounds of the Panama-Pacific International Association at San Francisco. Permission has been granted by the exposition company for the erection of such a building in addition to the regular transportation building originally provided for. The proposed building has been designed by G. Albert Lansburgh, San Francisco, and has been approved by the architectural commission of the exposition. It is intended that the building will house the most attractive automobile show the world has ever witnessed. This will last throughout the entire period of the big fair. The processes of manufacture and assembling will be shown complete. The building will be just south of the Machinery Palace. The automobile manufacturers will spend \$90,000 in interior decorations, giving the building the most attractive interior of any of the exposition buildings so far as now known. It will have a front of 275 feet and will be 800 feet deep, covering something over five acres.

## TIRE EXPORTS \$3,222,133; ENGINES EXCEED A MILLION

Automobile engines, tires and parts to the value of \$8,963,547 were exported from the United States to foreign countries during the calendar year of 1912, according to information which is obtainable from the advance report of the Department of Commerce and Labor, which figures are supplementary to the car exports, valued at \$23,703,989; during the preceding year, 1911, this figure was \$5,913,709. During the two years the value of the several items making up these totals were: Engines—1911, \$201,409; 1912, \$1,137,285. Tires—1911, \$2,458,177;

1912, \$3,222,133. Parts—1911, \$3,254,123; 1912, \$4,604,129. The engines for 1911, however, are for the last six months only, they not being separately listed prior to July 1.

In December, 1912, parts to the value of \$367,364 were exported, while in the same month of the preceding year the figure was \$302,935. The tire exports in these same comparative months were: December, 1911, \$200,450; December, 1912, \$187,434. Similarly comparing the engine exports, the statistics are: December, 1911, 447, \$54,836; December, 1912, 854, \$100,753.

In December, 1912, 87 cars, valued at \$227,652, were imported, which compares with 103 cars, at \$227,067, for December, 1911. The imports for the years 1911 and 1912 were, respectively, 972 cars, valued at \$2,098,481, and 868 cars, with a valuation of \$1,999,587. A peculiar combination is found in the December imports in that while the number dropped from 103 to 87 the valuation increased by \$585, which, however, is slight, being less than one per cent.

During 1912 there were imported parts valued at \$275,819, and in December, 1911, the valuation was \$50,325, and in that month of the year just closed, \$12,694.

### BANNISTER'S CELEBRATION

Mr. Bannister has been making vehicle wheels and ordering them made for more than 36 years. To be exact it was just that many February 4. He had a right to celebrate, and he did.

Mr. Bannister knows a lot of things besides wheels, and he is always master of his subject. We wish him a long business life and a merry, prosperous one!

### MOTOR DRIVES FOR WOOD-WORKING PLANTS

The electric motor as a medium of driving wood-working machinery is certainly a great advantage over many of the old forms of belt driving, but we find many poor applications of the motor drive, writes C. R. McGahey, in *Wood Worker*.

In the first place, in wood-working shops we should select the alternating type of transmission, as the alternating current motor is run without any sliding electric contact, thus avoiding any possibility of having an electric spark ignite the fine wood dust and causing fire. This is one of the principal reasons for its use.

The direct current motor has to have brushes and will cause a spark that may be very dangerous. The wiring system for the alternating current system is simple as well can be had for any kind of electric transmission. Notwithstanding these facts, the alternating current motor in the smaller sizes is so constructed that it is practically what would be called "fool-proof," and requires no great amount of electrical knowledge to successfully handle it. It really needs no attention beyond the lubricating of the bearings. It should be kept dry, as moisture will cause trouble.

It is a mistake to carry the installation to the extreme—that is, to put an individual motor on each machine, regardless of its size or capacity. This is what might be called an ideal way of doing things, but the installation costs too much money. And not only this; the very small motor is not nearly so efficient as the larger ones, therefore what is known as the group drive is very much better.

For instance, place a 10 h.p. motor to drive a lineshaft. This shaft may have coupled to it a small universal saw, a band saw, and possibly some other small tool. This seems to be one of the most practical ways of making motor installations, from the fact that our investment in motor equipment does not run away with us. The shafting friction for a small set of machines does not amount to any great thing in the way of lost load in friction, and would no more than balance what we would have in loss in our small individual motors.

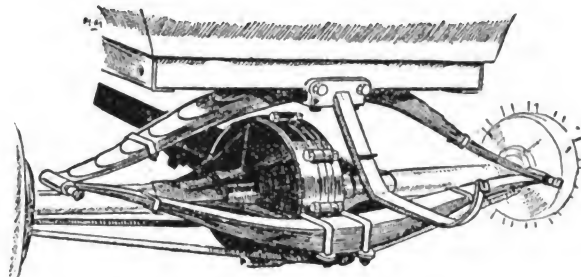
There is a strong tendency now to dispense with a lot of countershafting formerly used in driving wood-working ma-

chines, and it is the electric motor and the high-speed lineshaft that are doing it. It is easy to understand the high speed and light sizes in connection with electric motors, but even among those not using motors there is some of the same tendency to use lighter lineshafting and run it at higher speed. It helps reduce the friction load by making the shafting and pulleys lighter, the belts smaller and the strain or pull less.

### CRUDE RUBBER DROPS BELOW DOLLAR A POUND

The price of crude rubber has dropped below a dollar a pound for the first time in five years, the previous low record being 67 cents in 1908. Lack of demand, due partially to the strike of tire workers in Akron, and the recent failure of two important and well established rubber trading firms—the New York Commercial Co. and the George A. Alden & Co. of Boston, Mass.—are given as the cause of the decline. Since the first of February, when up-river fine Para was quoted at \$1.02, the prevailing price has been \$1. until the 16th, when a gradual slide which brought the price down eventually to 96 cents, where it now rests, was commenced. The price has been gradually declining since the furore of 1910, when it bounded up to \$3.10.

### IT'S ENGLISH, YOU KNOW



Here is an idea for a sidewise hung full elliptic rear spring on an automobile. Do you fancy it? It's different, anyway.

### AMERICAN TIRE COMPANY INCREASES CAPITAL

At the recent annual meeting of the American Tire and Rubber Co., of Akron, O., the following new directorate was elected: Adam Duncan, Charles F. Fosnight, F. L. Kryder, Gus Sieberling, C. M. Wertz, G. C. Waltz, F. M. Lapp, Frank Pfeiffer and James Shaw.

In the subsequent election of officials, Adam Duncan was chosen as president and Frank Pfeiffer treasurer. G. C. Waltz was chosen vice-president and F. E. Rowe, secretary and assistant treasurer.

The first business undertaken by the new board of directors was the increase of the capital of the company from \$200,000 to \$500,000. It is not, however, intended to issue at the present time more than \$50,000 of the new stock. A new solid tire is being perfected by the company, which will soon be placed on the market. Patents for the new tire will shortly be issued.

### GOODYEAR TO REDUCE TRUCK TIRE PRICES

"There will be a reduction of 10 per cent. in the prices of Goodyear motor truck tires," announces C. W. Martin, manager motor truck tire department of the Goodyear Tire and Rubber Co. "This reduction is made possible by reason of our large volume of business in motor truck tires. For the 1912 season something more than 2,983 trucks have gone out from the motor truck factories, equipped with Goodyear truck tires."



## CHANGING MEN

We will all admit that a foreman must control his department if we are to hold him responsible for the work. To discharge a man should only be done in cases of emergency. A man's good record should count in his favor, even if he has made a bad blunder, for it is well to remember that a man seldom makes the same mistake twice, while, on the other hand, a new man would be very apt to do the same thing over and over again.

If we will remember our own end of it in many things, we will not be so apt to look for perfection in the men who work for us. Taking this for granted, it is a mistake to even expect them to know as much as we do about the work, for if they did the chances are we would be working for them.

We must take the best men we can get for the prices we feel we can pay, and try to show them and train them to do the work so as to secure the best possible results desired. It should be remembered that when we discharge a man we are throwing away all the training we have given him, and the time spent in training is a total loss. It is better to put up with some failings than to spend the time teaching a new man, and there is every chance that the next man will not be much, if any, better.

Leaving the employe or the man out of the question, and considering only the cost of producing work, it is better to keep from changing men as much as possible. Performing a certain kind of work day after day brings a certain knowledge which comes in no other way. It develops the little kinks that cannot always be recorded, and which a new man must learn from experience in the same way.

The object of the foreman or superintendent should be to turn out work at a low cost, and rules and discipline are merely means to that end. An old employe often has a value which cannot be expressed in dollars or paid for in a like manner. A very kindly consideration for his comfort and well being retains his loyalty and co-operation and pays big dividends on the investment of any institution.

A foreman should by all means study the individual ability of his men, and try to arrange his work so that each man will get the kind of work to which he is best adapted. This can best be done when the foreman gets the work long enough before he has to put it in the shop, so that he may study methods as well as the man for the job. Even when a job is but a simple one, or something which has been done many times before, the foreman should always think there might be a better way, and not pass it over without some thought as to which would be best to do.

## "MOTOR SPIRIT" AND ITS POSSIBLE EFFECT ON THE FUEL SITUATION

"Motor Spirit," a lasting and "destructive distillation" of the residue which remains after the production of lubricating oils and which nominally is styled "gas oil" or "fuel oil" and sold as such for a low price, is controlled by the Standard Oil Co. of Indiana under patents issued since the first of the year to W. M. Burton, the analytic chemist and a director of the Indiana company. The fuel has been in use for five or ten years in a limited way. Mr. Burton's patent does not cover the fuel itself but a new process which permits of its production cheaply and in quantity. The previous method made the cost of its production for general use practically prohibitive.

The immediate effect of this fuel on the market must of necessity be confined to the west for the simple reason that the process is owned outright by the Indiana company and to utilize it elsewhere will entail the payment of royalty.

In appearance and in characteristics, motor spirit is not unlike gasoline, except that it is slightly yellowish in color and emits a more pungent odor when permitted to evaporate in an open dish; in fact, it virtually is a low-grade gasoline of from 54 to 56 Beaume and, as such, can be used instead of the lighter

fuel in any internal combustion motor constructed for gasoline, provided only that minor carburetor adjustments are made; compression need not be altered.

As might be expected by reason of its greater weight, it burns under normal conditions with a whitish smoke and leaves slightly more sooty deposit in the cylinders than does gasoline. It is declared, however, that both of these undesirable features can be eliminated by careful carburetor adjustment and in any case they are more than compensated for by the fact that as the fuel contains a greater percentage of heat units per unit of volume it permits of the generation of greater power on slightly less consumption.

In the distillation of crude oil there is first produced naphtha, varying in percentage according to the grade of crude oil used; part of the naphtha afterwards is converted into gasoline by further distillation and chemical treatment. After the naphtha and gasoline are extracted the refined oil of commerce is made, after which there is produced a distillate known as "paraffin distillate," which, after being chilled and pressed for the removal of paraffin wax, is again subjected to distillation, producing various grades of lubricating oils. It is the residue from this latter product, which upon "special destructive distillation" yields motor spirit in paying quantities.

Thus, it may be made from any grade of crude oil; its boiling point is somewhat higher than that of commercial gasoline, which may range from 115 degrees to 350 degrees, though by reason of the fact that it actually commences to boil at a lower temperature than does gasoline there should be no difficulty whatsoever in starting an engine upon it. The final boiling point may be as high as 400 degrees, though it probably flashes when heated to about 100 degrees.

## EFFICIENCY NEEDED IN MACHINERY

Much has been written about increased efficiency of employes, and how to increase it, but little has been said about doing the same thing with the machines we use. Did you ever stop to consider what it would mean if all the machines that we buy would do all the work that the manufacturer claims they will do? Then, indeed, would we have efficiency all around.

Experience shows that you can cut off 20 per cent. of what he says, to get at the average output of the average machine. He does not wilfully misrepresent things, but that there is nothing said by him as to the length of time that it takes to keep these machines in order and do good work. Some machines, of course, will run for several days without any work being done on them, but then when they do have to have the knives ground up, or other small repairs done, it takes quite a bit of time to do this.

When a manufacturer puts out a machine, why would it not be a good thing for him to put his figures on its capacity low enough to allow for all these stoppages? Then when we buy a new machine or figure on it, we would know somewhere near what it would do for us. There are machines of some kinds that will do more than is claimed for them—for instance, the electric motor. This will, as a rule, carry a 10 per cent. overload constantly. The steam engine will also do more than its rating calls for, while, on the other hand, the gas engine will not do within 30 per cent. of its rating. The gas engine is all right, and it would be hard to get along without it, but at the same time, when you buy one, be sure and get about twice as much power as you think that you would need or twice as much as you would get with a steam engine or an electric motor.

The complaint is that machines of this kind are overrated, and the buyer who is not acquainted with this class of machinery will think, after he gets to using it, that he has been gold bricked.

The Martin Carriage Company, York, Pa., has contracted to build auto trucks for the chemical and hose apparatus of York's Vigilant Fire Company.

## KEEP THE QUALITY UP

Here is something that bears a vital relation to every wood worker, and has many sides to it. It applies to the service rendered as well as to the product of such service. It affects employer and employee. Indeed, it is the keynote to the success or failure of the plant and the laborer. There is no question today that is so vital to you and me as this important one of quality.

What comprises the highest quality in a workman? Is it not the ability to produce the largest amount of goods of the highest grade, with the least amount of energy and cost? In other words, to do more work, up to a given standard, with less lost effort, time and waste of material, than can be done by an inferior workman.

What benefits accrue to such a man? They are many. He stands first chance for advancement to a higher position of trust and responsibility. He also will receive higher wages, usually in just the proportion that he is able to demonstrate satisfactorily that he possesses the quality to deserve them.

He sets an example for others to follow; he sets the pace. In athletics the scratch man is the one who has established an authentic record of accomplishment. Let us hope that the day of friendly rivalry at our work has not passed away. Some of the keenest enjoyment of working is had in fair and earnest contests in the accomplishment of a given task. Those who have never had such an experience have missed some of the zest of working that lifts it out of the sordid race for money into the very pleasure of living, and bringing practical, useful things to pass.

Self respect means a whole lot. It includes honesty, trustworthiness, fairness, just service and equivalent reward. When we have these, and can "make good," we never need lack for a position.

How many of us stop to consider that these phases of capability are mental, says *The Wood Worker*? And yet they are. Quality of work is the surest index to mental caliber. Hence the importance of improving the opportunities for study and mental development. When we think rightly, clearly and quickly, we accomplish good results, and vice versa. Quality, then, comprises the measure of our mental capacity.

When we think with directness and purpose as we work, we usually "arrive." This is the foundation for quality in our work.

## SIZE OF AXLES, WELDED AND SOLID FLAPS

It is almost impossible to determine exactly the correct dimensions of carriage and wagon axles, because of the various strains to which they are subject, the differing qualities of material used, the various width of track and the different weights they have to bear in use, as well as the differing condition of the roads the vehicles pass over, taking no account of the excessive strains that sometimes occur in runaways and collisions, which are liable to smash the entire carriage.

These remarks apply to all parts of the carriage, but more particularly to the axle. The greater strength of steel allows smaller size and lighter weight. A given weight of steel axle carries more weight, and the axle arm is more easily hardened. Because of the conditions to which a carriage is subjected in passing over roads, the shocks and vibrations, steel, however mild, is not so reliable as best fibrous iron. For this reason all our light work, that is, buggies and phaetons, where the axles and wheels are elastic, or which slightly "give" under the weight of the occupants, are made of steel, and heavier vehicles, such as broughams, cabriolets, coaches or wagons, where the wheels are heavy and stiff, the axles are made of best refined iron. The majority of axles have no flaps at all; many have box flaps, some welded flaps, while the best builders use solid flaps. The box flaps are very handy to the carriage builders; they can be shifted to the required width of the springs across, and are no doubt useful, but in time, by the

action of the springs and vibrations of the vehicle, they become loose. The welded is inferior to the solid flap, because it is welded with its fibers at right angles to the axle arm, and besides the weld is sometimes faulty. Some smiths weld the flap directly on top surface of axle, which is not objectionable, but is not always reliable. The end collars on all axles should be forged in the solid, that is, the iron should be heavy enough to draw out collars and flaps from the solid iron.

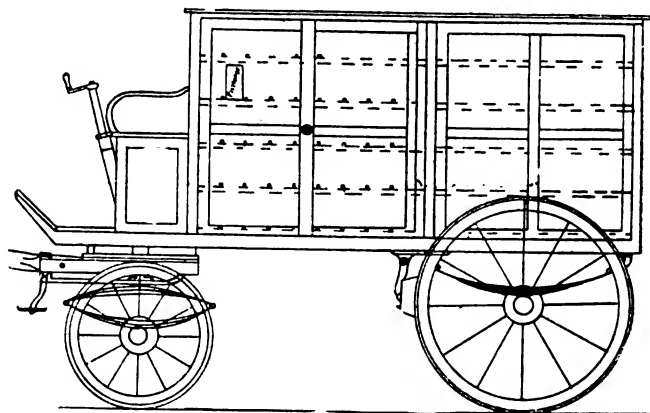
## WHEN TO CUT HARDWOOD

If timber is cut when the sap is rising it will warp, twist and split in drying. In some woods, such as chestnut and hickory, the worms will eat it into a honeycomb; will bore it full of small holes. When sap first begins to rise it is as sweet as honey, in chestnut and hickory. If these woods are cut in April, May, June or July, the worms will certainly eat them up. The sweet sap dries in the wood, a fly stings it or lays eggs and starts the worms. If a piece of hickory is cut in the month of May or June and placed at the root of a pine or oak tree, the worms will start in the hickory, get in the pine and kill the timber for miles around; the same in oak.

The best way to get rid of these pests is to put the timber in a vat and boil the sap all out of it.

## NOVEL ICE CART

Herewith is a scale drawing of an ice wagon made in Germany that is used for delivering "tank" ice. A compartment showing one block of the artificial ice can be seen. The deliv-



eries are from the side and rear, and there is a certain convenience about the idea that may meet with approval by builders of ice delivery wagons here.

## AN ITEM ABOUT NEW HAMPSHIRE

Wheelwrights connected with blacksmith shops are scattered throughout New Hampshire. Hub makers, mainly for farm wagons are numerous. They use rock and soft elm, black or sweet, and yellow birch. The increasing scarcity of elm makes a demand for substitutes, and black and yellow birch fill the bill.

Buggies, carriages, farm wagons, sleds, ox carts, city delivery wagons, street sprinklers, and wheelbarrows are first among the finished vehicles which the New Hampshire manufacturers turned out in 1911. The uses of the native woods are poles and shafts from ash and second growth white oak; single and whiffle-trees from ash, oak, beech and hickory; spokes from white oak, red oak and yellow birch; and rims from red oak, ash, sugar maple and elm. Red oak and ash are demanded for felloes; ash, sugar maple and beech for spring bars; and red oak, white oak, ash and yellow birch for hounds. In the body work red oak, ash and beech serve as sills and frames, and spruce and sugar maple as bottoms. The panel material was contributed by basswood, yellow poplar, ash and white

pine, while the frames of the tops and slats were made from sugar maple, elm and ash. Longleaf yellow pine came from Alabama to serve as wagon bottoms; rock elm was the principal wood for sleigh and sled runners; ox cart frames and floors demanded large quantities of native beech, while wheelbarrow makers used only white pine and basswood.

Of the woods specified the annual consumption is as follows: Black birch, 506,000; yellow birch, 464,000; sugar maple, 420,000; red oak, 360,500; white oak, 273,700; ash, 223,000; slippery (rock) elm, 181,000; beech, 129,000; basswood, 105,800; white pine, 89,500; hickory, 73,000; paper birch, 40,000; spruce, 36,000; white (soft) elm, 8,000; aspen (popple), 2,000; silver maple, 1,000; butternut, 500; pitch pine, 330.

## WORKING DRAWINGS OF CART AND WAGON

(See illustrations opposite)

We tap foreign sources for working plans of vehicles for the novelty of change. The French cart has features that are interesting, and the German wagon is indicative of general practice in Germany. The spring suspension is interesting. Der Wagenbau prints the drawing.

## GOODRICH NET SALES FOR NINE MONTHS

**\$37,500,000**

During the nine months which ended December 31, 1912, the net sales of the B. F. Goodrich Co., of Akron, Ohio, amounted to \$37,533,861, on which the net profits were \$3,522,489. The statement in full follows:

Net sales .....	\$37,533,861
Manufacturing, selling and general administration expenses .....	33,814,527
Net profit from operation.....	3,719,334
Miscellaneous income .....	571,845
Total income .....	4,291,179
Depreciation .....	440,852
Interest and bills payable.....	327,838
Net profit .....	3,522,489

The consolidated balance sheet of the B. F. Goodrich Co. as of December 31, 1912, follows:

Assets:	
Real estate, buildings, plant, good will, etc.....	\$70,685,722
Investments in other companies.....	1,635,958
Preferred stock in treasury.....	2,227,117
Current assets .....	24,007,698
Deferred charges to operation.....	229,619
Total .....	\$98,786,114
Liabilities:	
Common stock .....	\$60,000,000
Preferred stock .....	30,000,000
Current liabilities .....	7,679,876
Reserve for contingencies.....	300,000
Surplus .....	806,235
Total .....	\$98,786,114

## LEWIS RETIRES AS HEAD OF MITCHELL-LEWIS COMPANY

William Mitchell Lewis, on February 19, relinquished the offices of president and general manager of the Mitchell-Lewis Motor Co., of Racine, Wis., with which he and his forebears have been intimately identified for at least two generations. His retirement created a mild sensation, as he was considered one of the Mitchell-Lewis fixtures. The vacancy was filled by the election of Joseph Winterbotham, Jr., who became chairman of the executive committee in November, 1911, when the Mitchell-Lewis company floated a \$2,500,000 note issue. Winterbotham represented the banking interests which stood behind the loan and has been their official representative in the Mitchell factory.

By an official statement issued by the board of directors through William T. Lewis, chairman of the board, it is declared that Lewis's resignation "has nothing whatever to do

with the financial condition of the company, which is splendidly financed and never in better condition to serve the public."

William Mitchell Lewis will hereafter devote his entire attention to his other interests, which include the Racine Rubber Co., formerly the Kelly-Racine Co., and the Racine Daily Times. The Times itself states that his retirement from the Mitchell-Lewis Motor Co. will have no effect upon its policy, adding that the Lewises, father and son, will continue to hold a controlling interest in the corporation.

## NEW SOURCE OF TURPENTINE

Turpentine from western yellow pine, says the Department of Agriculture, can be put to the same uses as that from the longleaf pine of the southeast, which furnishes the bulk of the turpentine of commerce. Western yellow pine forms enormous forests in the Rocky Mountain and Pacific Coast states, while the supply of longleaf is fast melting away. A product very similar to turpentine can be obtained also from pinon pine, another tree common in the southwest.

Careful tests made by the Department have shown that the yield of turpentine and rosin per season from western yellow pine in Arizona is only two-thirds that from the southeastern pine, the difference being due to the fact that the season of flow in the west is about 25 weeks, and in the south about 33 weeks. During the civil war, when turpentine operations in the south had virtually ceased, some operations were carried on in California to meet local needs. But with the return of the southern product to the California market, the western operations were abandoned.

The results of a chemical examination of the oils of western yellow, pinon, digger, sugar, and lodgepole pines which have just been published by the Forest Service in an official bulletin show the possibilities of the rosin and turpentine from western yellow and pinon pines as a supplement to the present supplies. Economic problems of markets, transportation, and labor remain to be solved.

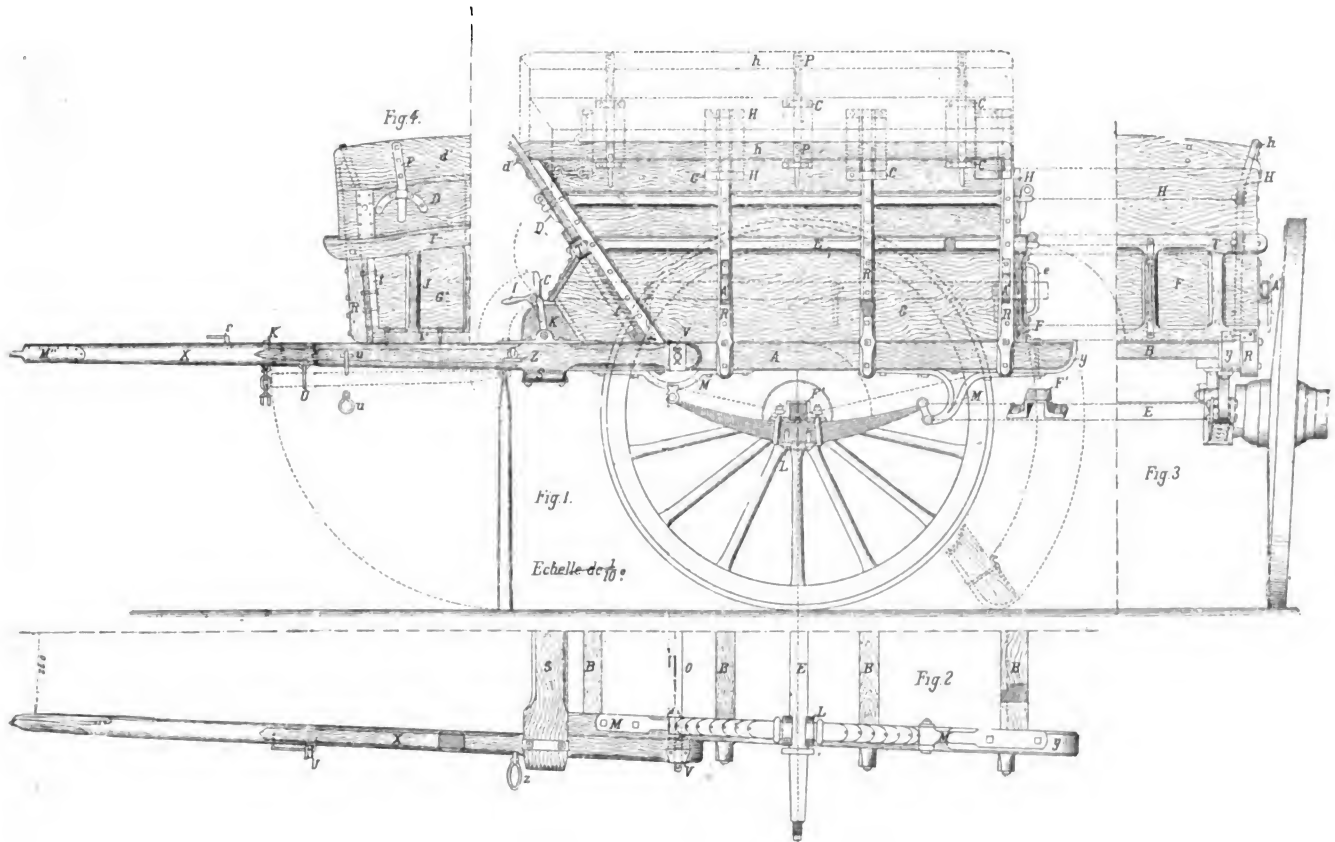
## SWINEHART COMPANY EXPANDS

The Swinehart Tire & Rubber Co., Akron, O., announces that it has let a contract for a new building 102x70 and three stories high, absolutely fireproof, to be constructed of reinforced concrete. This new addition will be erected on ground just west of the present building at the corner of North Howard and North streets. The rumor that the Swinehart company might remove from its present location to some site where there is more room to expand was confirmed by Mr. Walsh, president of the company. "It is true we are expecting to move to a new site where we will have more room. At present we are looking for a site to build. On account of this new building which we will put up, it will be at least two years before any removal will take place. This building we are forced to build at once as all our output for the coming year has been contracted for, and with our present limited means we will be unable to meet our contracts."

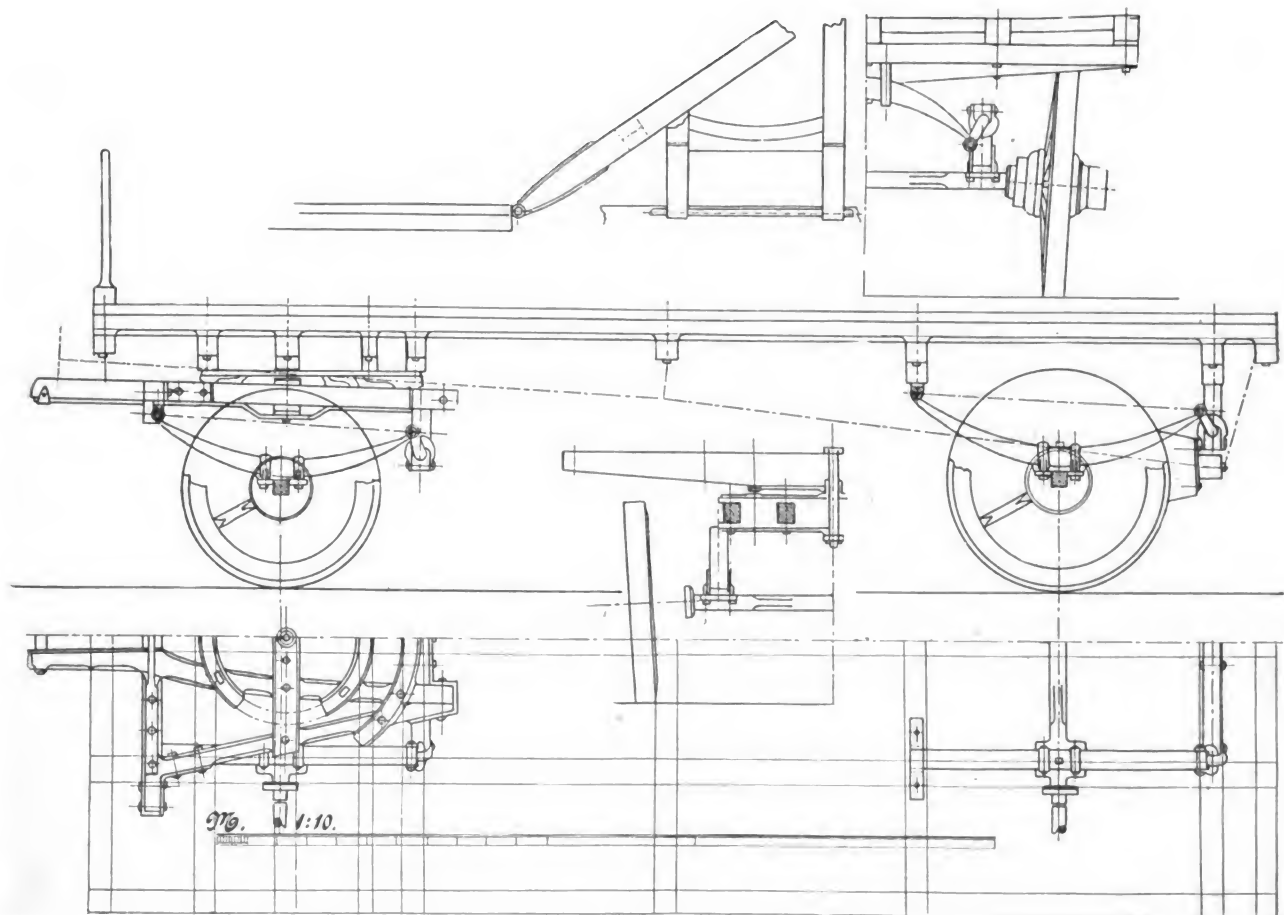
The present number of men employed at the plant is about 300 and the erection of the new building will give employment to many more. The new building will be equipped with an entire new steam plant, new boilers and new engines. The entire three floors will be given over to the manufacture of pneumatic and solid tires.

## NEW VARNISH BRUSH

There is a brush marketed for using enamel or varnish. It is of flat oval type. It is what may be called a "clean" brush, as the steel ferrule, free from rivets, offers no catching points for dirt. The handle is shaped so it may be twirled in or out of spirit, thus freeing it from color. It is also provided with a neat idea for suspension, to keep it clean when not used.



**WORKING DRAWING OF A FRENCH DUMP CART**



**GERMAN PLATFORM BODY WAGON**

## DOINGS IN VEHICLE TRADE IN ALTOONA, PA.

Altoona, Pa., is a large car building center and is a very progressive place, with a population of about 55,000 and still growing. There is considerable country trade in the carriage and wagon line.

J. Oswald, at Green avenue and Seventh street, is at that location temporarily and may move April 1.

F. A. Jackson, of 618 Eighth avenue, had a big year in delivery wagons and says it is hard to get good mechanics, as the Pennsylvania railroad gets all of them for their car shops.

Mr. Hite has started in the business of carriage and automobile painting, at Seventh avenue and Twenty-third street.

F. B. Nowlen, who was for 25 years on the road selling carriages and wagons, has entered into partnership with Russell Delozier, to be known as Russell Delozier & Co., at Sixth avenue and Twenty-seventh street. Mr. Delozier has been in business for ten years and does a large business in building wagons and carriages. They expect to keep 25 men busy for this line and also to build automobile bodies. A specialty will be made of delivery and farm wagons. The lines they will handle are as follows: W. N. Brockway, Homer, N. Y.; W. C. Laderer, Evans City, Pa.; Auburn Wagon Co., Martinsburg, W. Va.; Burkville (Pa.) Mfg. Co.; Colonial Buggy Co., of Hamilton, O. They expect to enlarge and increase the business in every way.

H. L. Stultz & Bro., of Union avenue, sells Columbus and Moyer buggies and Martin delivery wagons made at York, Pa. They have given up the Studebaker line. It is reported that a very good season is in sight for heavy wagons. They also handle the Conkling & Kramer farm wagon, the Acme dump wagon, the Maxwell auto truck and the Firestone, Columbus. They also handle farm implements and harness goods. J. L. Black, who was with Fluke, has charge of the automobile department, and Claire Hileman, who was in business for himself, will have charge of the implement line.

## JOHNSTOWN (PA.) VEHICLE TRADE NOTES

Johnstown, Pa., has made wonderful advances. Eleven years ago it was completely wiped off the map by the big flood. This calamity killed 3,000 out of 30,000 people and today it has 60,000, is more prosperous than ever and is making rapid advances. All the older heads of the business places were killed and the city has been built up since by the younger element.

A. F. Stutzman & Co., of 427 Somerset street, have erected a new two-story and basement building, which cost \$5,000. Their business has more than doubled since moving in the new building. They are carload buyers in the wagon and vehicle line. While others are going somewhat into the automobile line, this firm is sticking close to horse drawn vehicles. They never bought by the carload till after moving into their new quarters. They have taken a carload of D. B. Miller, of Mifflinsburg, Pa., and last year took up a line of the Parry Mfg. Co., of Indianapolis, Ind., and have ordered two cars of them. They have added a new line lately of the wagons made by the Conklin Wagon Co., of Olean, N. Y. Have sold one car and ordered another car from this company.

J. M. Tufts, at 315 Bedford street, will have to move, as the Baltimore & Ohio will take his property as a part of their site for a new passenger and freight station. As soon as he gets another location he intends to build a new shop and will go into the business larger than before. He will also repair automobiles and put in machinery.

The Swank Hardware Co. have a large shop and have gone extensively into the automobile business. The carriage business has fallen off 50 per cent. Doctors who used to buy \$150 buggies and a set of harness are now buying automobiles. They have large, modern show rooms and a six-story building on Adams street, which has 200,000 square feet of floor space. About 75 hands are employed. Frank Eppley is in charge of

the automobile department. Five men are on the road covering the surrounding counties. They are handling the Buick and Lozier automobiles and the vehicles made by the Durant & Buggy Co.

## ANNUAL MEETING OF INSTITUTE OF BRITISH CARRIAGE MANUFACTURERS

The annual meeting of the Institute of British Carriage Manufacturers was held on Tuesday, January 21, at the hall of the Worshipful Company of Coachmakers and Coach Harness Makers, of London. President Thrupp occupied the chair.

The secretary in his annual report recorded the demise of several of the oldest members: Sir Wm. Angus, Mr. Wm. Gilchrist and Mr. T. E. Worger, the latter for many years honorary treasurer, and besides these, Mr. James Connolly and Mr. J. W. Humby.

Mr. Herbert Austin, of Northfield, Birmingham, was elected president. Mr. Austin is a motor engineer of world-wide reputation, being one of the pioneers in that field, and his selection as president marks the first time this honor has been bestowed upon one of the automobile industry.

Mr. Percy Preston was again selected as the honorable treasurer, and Mr. Wm. Hamlin-Hamshaw was reappointed secretary.

The annual banquet was held in the evening at the Trocadero restaurant. In his speech the new president said: "My election to the presidency perhaps shows more clearly than anything else that the old feeling of antagonism between the chassis builder and the carriage builder is passing away."

## FEBRUARY MEETING OF PHILADELPHIA CARRIAGE BUILDERS

The Carriage, Wagon and Motor Vehicle Association of Philadelphia held its February meeting at the Hotel Hanover, Twelfth and Arch streets, on the evening of the 21st. Officers to serve one year beginning with the April meeting were placed in nomination. The election will be held at the March meeting. The annual banquet will take place late in March.

The subject for discussion was "How to Increase Our Business," the first speech being made by Walter Taylor and the second by William E. Marbaker. Each covered the subject in a different way. Mr. Taylor is an accessory man, and, although not a vehicle builder himself, is in close touch with the trade in all its branches. Possessing an observant and analytical mind, he was able to give the members a good idea of the course a manufacturer should take to insure success, and what he should do so as to avoid failure.

Mr. Marbaker is an active wagon builder of long experience and an unusually successful one. His personal experiences served as the basis for the greater part of the sound advice which was incorporated in his talk.

## RIM JOINT BETWEEN THE SPOKES

In nearly every case the rim joint is in the center of the two spokes on light and heavy wheels, and in all cases this joint will sink in below the tires. For this reason, the fewer joints the better. On American wheels generally, bent rims are used, two for each wheel. Some European wheel makers use only one rim for each wheel, consequently there is one joint only. We think this is better. The objection of "sinking" is, and always has been found on sawed out felloes, proving that the joint weakens the rim, notwithstanding the rim plate is secured with two bolts. The best plan is to move each joint out of the center on bent rims or sawed out felloes; the "short" end, which is the strongest, will hold the weaker end—the longest—up, and consequently strengthen the weak spot on a wheel. Another mistake is to use large tenons on light rims. This weakens the rims, and all spaces between the rims sink in.



## USES ILLUMINATING GAS IN PLACE OF GASOLINE

For some time past, Ford engines have been "run in" on artificial gas instead of on gasoline, the requisite apparatus for the purpose having been developed by the Detroit City Gas Co., which is a subsidiary of the American Light & Traction Co. The apparatus is nothing more or less than a suitably constructed mixing valve, and it is estimated that in addition to saving a really great amount of money the use of gas instead of gasoline for the purpose of preliminary testing also has a beneficial effect in that it reduces the demand for the usual fuel if only by a slight amount.

Some 150,000 engines will be turned out by the Ford company during the year and each ordinarily is run upwards of an hour "on the blocks" before a final test is made and the engine is placed in a chassis. The same plan of employing city gas for preliminary "running in" also is used in some of the large British factories, and its advantages may be appreciated by the statement of the head of one of them that at least \$5,000 a year is saved by the proceeding. In the factory in question, it is estimated that an amount of gas necessary to run an engine as long as it ordinarily would run on two gallons of "petrol," at 25 cents a gallon, costs just 8 cents.

## LOUIS HUPP ORGANIZES MONARCH MOTOR CAR COMPANY

Louis C. Hupp, former secretary and treasurer of the R. C. H. Corporation, of which his brother, R. C., was president and general manager until recently, has organized the Monarch Motor Car Co., of Detroit, which has been incorporated under the laws of Michigan. It will engage in the manufacture of a 30-horsepower, five-passenger touring car to sell at about \$1,000, fully equipped. Temporary headquarters have been acquired on Scotten avenue, pending the closing of a contract for the erection of a modern factory building which, it is stated, already has been practically consummated.

## PANAMA RUBBER COMPANY OFFICERS

W. D. Newerf, the Los Angeles tire jobber who recently organized the Panama Rubber Co., with an authorized capital of \$1,000,000, has assumed the presidency of the corporation. The other officers are: W. E. McCune, first vice-president; J. S. Benner, secretary; John F. Roe, treasurer. Executive offices have been opened in the Los Angeles Investment Building, but a factory site has not yet been secured. It is stated, however, that "one of the best known tire builders in the country" has been engaged as factory superintendent, but his identity has not been disclosed.

## UNUSUAL CONSTRUCTION IN NEW FRENCH GEARSET EMPLOYING TWO SLIDING PINIONS

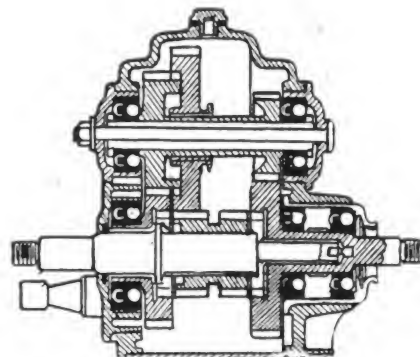
H. L. Hardy, of 237 Fulton street, New York City, has acquired the American rights to the manufacture and sale of the Dux transmission, recently introduced in France by the Society de l'Evolution Automobile de Paris, and which is novel in that it is wholly devoid of dog clutches, although the gears always are in mesh; the design naturally permits very compact construction.

As is clearly shown by the accompanying illustration, which is of the three-speed type of transmission, the device is not unlike the orthodox gearset in general appearance.

The motor shaft carries splined to it so that it can be slipped from end to end in the usual manner, a small diameter pinion with a very wide face and grooved in the middle for the reception of the shifting yoke, and a loosely mounted gear wheel

at the motor end provided with external teeth meshing with a gear wheel carried on the lay shaft and internal teeth into engagement with which the smaller pinion can be slipped, locking the larger wheel to the motor shaft. The driven shaft carries but a single gear wheel of considerable diameter which meshes with a pinion carried on the lay shaft; this pinion is formed integral with the larger gearwheel on the lay shaft, the connecting sleeve forming a shaft on which is mounted a slideable wheel meshing with the small pinion on the motor shaft and provided with an internal set of teeth designed to lock with the teeth of the larger wheel carried on the lay shaft.

The operation of the device is simple in the extreme. Starting from the neutral position—that is, with the small pinion of the motor shaft out of engagement with either the loose wheel on the engine shaft or the wheel on the propeller shaft, the loose wheel on the lay shaft is slipped into engagement with the larger of the integral pinions carried on the same shaft. Drive then is transmitted through the small pinion to the lay shaft with considerable reduction and from the small lay shaft pinion to the driven shaft wheel with further reduction. Sec-



Dux Clutchless Gearset

ond speed is obtained by locking the loose wheel on the motor shaft, whereat drive is transmitted to the lay shaft without reduction; the drive from the lay shaft to the driven shaft is always the same. High gear is obtained by engaging the small pinion on the motor shaft with the internal teeth formed in the gear wheel on the driven shaft whereby direct drive straight through from the motor to the propeller shaft results. When in the neutral position only the free wheel on the lay shaft is in rotation, but at all other times the lay shaft ensemble rotates. Reverse is obtained by means of a pair of integral clash gears, which are brought into engagement with the smaller pinion on the motor shaft and the gearwheel on the driven shaft and which naturally act as idlers.

The compact construction is exemplified by the fact that the whole mechanism is contained in a case only 8 x 8½ inches; larger sizes providing four speeds and a type of heavier construction for use on commercial vehicles also are made to meet different conditions. The latter type has been adopted by the Society General des Omnibus de Paris for use in connection with motor buses.

## FISK RUBBER CO. PUTTING UP \$400,000 BUILDING

The Fisk Rubber Co., of Chicopee Falls, Mass., is having constructed a new storage house, 240 x 90 feet, three stories and basement, of steel, brick and concrete, to be completed by June or July. This building, which is to cost \$400,000, will be parallel to the tracks of the Boston and Maine Railroad and a new siding will be built, giving facilities for loading ten or twelve cars at one time. Their mill No. 7 is being enlarged by the addition of two more stories, thus enabling the company to materially increase its manufacturing facilities—a necessary measure with the present steadily increasing demand.

## PRINCIPLES OF SCIENTIFIC MANAGEMENT\*

What is scientific management? It is not any efficiency device for increasing output; it is not a bonus system; it is not a cost system; is not motion study or time study; it is not unloading a lot of blanks at the goods entrance and saying, "There is your system, go ahead and use it." Most people think of it as one of these things. Scientific management cannot and does not exist until there has been a complete mental revolution on the part of the workmen and the employer, and until this great and complete mental revolution has taken place, scientific management does not exist.

Part of the cost of manufacturing is the cost of material. Another part is the cost of production of the article, and a third is the overhead expense. The difference between the sum of these three and the selling price is the surplus. The workmen desire as much as they can get in the form of wages, etc., and the owners as much as they can get in the form of dividends. Under scientific management they have ceased combat over the division of this surplus. The result has been a surplus so large that both contenders get more than they ever received before. The workmen get at least 33 per cent. more wages, and the company gets larger profits. This is one result of the mental revolution.

The delusion is almost universal among workmen that the division of the surplus in the past has been entirely wrong; that the working men are not getting their proper share of the general profits of capital and labor. Although in some cases it is true, their feelings have been rashly augmented by the labor leaders, newspapers and the public. In an article on Division of Capital, in the Atlantic Monthly of June last, Norman Faig showed their conviction to be wrong. All that the working man can ask for is that the profits that accrue to capitalists should come to the people of the United States. They themselves could not demand all this profit. If it should be divided in the manner suggested there would be 13 cents per day per man as dividend. It shows conclusively that the hope of the workman does not lie in the division of capital. It lies rather in an increase of output.

The speaker outlines the older type of management where, for example, 500 to 1,000 men in perhaps twenty different trades have acquired their knowledge, not by books, but by observation and by traditional word of mouth. This is just the condition that obtained in the Middle Ages, and still largely obtains. Yet, in spite of lack of progress his trade is the workman's greatest asset. To achieve the best results one realizes that he must get the initiative of his workmen, but one's realization of soldiering forces him to the conclusion that to render this initiative the workman must receive a larger remuneration than his competitors. The employer who has the pluck to do this, and to continue doing it, will find that his men will respond to such good treatment. This is the highest type of management under the old system, yet it cannot compete with scientific management, for under the latter there is no spontaneity on the part of the workman, but continuous effort. This, because of the new and unheard of burdens which the management assumes.

The first of these principles is the gathering in of the great mass of traditional knowledge held by the workmen; recording it and reducing it to laws, rules and mathematical formulas. These deductions become of immense assistance in increasing the output. Rule-of-thumb knowledge is replaced by science.

Secondly, it becomes the management's duty to study carefully every man in the plant, his capacities, possibilities and limitations; and to train each to the highest class of work for which he is shown to be fitted—progressive selection and progressive study.

Thirdly, the science and the scientifically trained man are brought together. This is difficult. It can be accomplished only by binding the workmen to work by science. This, how-

ever, does not cause appreciable trouble. Nine-tenths of the trouble experienced comes from forcing the management and owners to assume their burdens.

And, fourthly, a great mass of work formerly done by the workmen is now partly taken over by the management, until the whole is more equally divided. On the management's side there is generally one man for every three workmen.

These principles are deduced from years of study and work under scientific management. The system is no longer something which might be found beneficial if tried—it has been well tried—and pays.

A careful study and series of observations in a plant where 400 to 600 shovellers were employed resulted in a reduction in the cost of handling iron ore from 8 cents per ton to less than 4 cents, after paying the workmen employed 60 per cent. higher wages, establishing a labor office, employing teachers to instruct the men how to scientifically handle a shovel, and timekeepers, etc., to record performances.

Investigation showed that the loads upon shovels under old methods varied from 3.5 to 38 pounds. Placed on a scientific basis, a load of about 21 pounds to the shovel, proper motions, simple and untiring, the work was now being done by 140 men. Furthermore, investigation into their private affairs showed the workmen to be living better lives, in every way, than before.

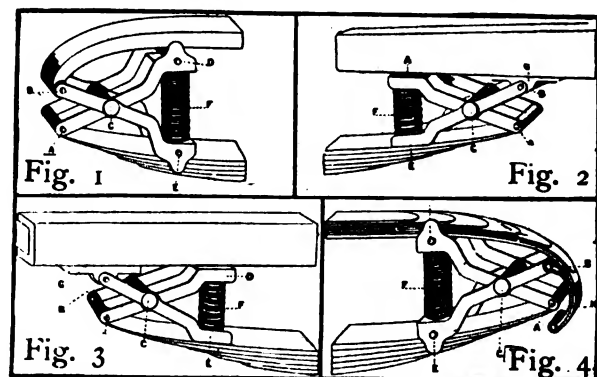
Illustrations were also given in the operation of machinery. The speaker claimed that not one in fifty of the machines in the factories of America are speeded accurately. The majority of them are 200 to 400 per cent. out, and from two and one-half to nine times as much work could be done by them if they were properly adjusted. In the work of the high-class mechanic science is so great a factor that he cannot gain the proper knowledge of himself.

I know of one case in machine manipulation where mathematicians were confronted with a problem involving twelve unknowns, and struggled with it for 18 years. Now the problem is solved in 20 seconds on a slide rule taking care of the twelve variables.

"If you are willing to pay the price in time and hard work, things that have through the ages been termed impossibilities can eventually be solved and put to use for the good of man."

## SHOCK ABSORBER FOR COMMERCIALS

The illustration shows a French idea for taking up the jar.



This model of shock absorber is said to act well, and it presents the idea in still another aspect.

## KEYSTONE SHEET METAL CO. IN RECEIVER'S HANDS

The Keystone Sheet Metal Co., of Ambridge, Pa., went into the hands of a receiver on March 1. The reason assigned is lack of capital to carry on the business. Receiver Frank L. Thompson says he hopes to pay all the creditors in full. At all events, he says, all creditors will receive a substantial proportion of their claims.

\*From an address delivered by Frederick W. Taylor before the Canadian Club, Toronto, Ont.

# Worm Gear

Mr. F. W. Lanchester\*

Power transmitting worm gear for motor car use requires to comply with two main conditions: (1) it must give an efficiency comparable, if not equal or superior, to the efficiency of the alternative types of gear, i. e., bevel or chain; (2) it must be of approximately similar weight and size to a bevel gear of equal horsepower capacity. It is unnecessary to mention silence as a third condition, since this is the point on which worm gear is notoriously beyond reproach. Compared to other forms of gearing on the score of efficiency, modern worm gear is well able to hold its own; the efficiency of chain gear is variously given as from 93 per cent. to 97 per cent. Samples of Lanchester worm gear taken from stock at the Daimler works showing efficiencies varying from 95 per cent. to 97 per cent., as tested and certified by the National Physical Laboratory.

On the score of weight and compactness the Lanchester worm gear does not compare unfavorably with bevel gear; the size and weight of a rear axle for a given duty is approximately the same for both types of gear. The maximum load that can be transmitted by any gear pair depends mainly upon the type of worm or screw gear employed. It depends, in fact, upon what tooth pressure the gear will stand without expelling the lubricant from between the engaged surfaces. It will be shown later that, in some cases, the limit is not the oil film, but rather the hardness of the materials of which worm and wheel are constructed.

## Historical

The history of the application of worm gear to the main transmission, that is to say, to the back axle, of the motor car, is, in fact, the whole history of the worm drive that is of interest to the present-day automobile engineer. The author, after a careful examination of the problem, designed and built in 1896 a special machine for the production of gear of the Hindley type, and fitted up his first car with worm gear the following year. At that time the hollow-faced or Hindley worm was a known text-book device and was probably in use somewhere, but the author had at that time neither seen nor heard of a worm gear of the Hindley type in successful operation.

The only case of prior use of a worm transmission of any kind in road automobiles known to the author is that of an electric vehicle exhibited in London in 1896; it is not known whether the said vehicle was ever put to run on the road. Prior to the advent of the gasoline car (and more generally the road automobile) it is well known that tramcars had been successfully propelled by worm gear, notably in Germany; the author lays no claim broadly to the introduction of worm gear for locomotive purposes. From the date of the fitting of the first worm gear transmission in 1897, every Lanchester car built has, without exception, been fitted with worm gear, and, until about five years ago, the whole of the said gear had been produced by the one original experimental machine. Since that date (about 1907), new and improved machines have been designed and constructed, and, in addition to the enlarged worm gear plant at the Lanchester works, a complete plant has been laid down at the Daimler works, with an output capacity of one million horsepower per annum.

A Lanchester worm gear plant has also been established at the works of the Warner Gear Co., of Indiana (who hold the American rights), which is capable of dealing with the present demand in the United States and Canada.

## Recent Developments

Probably the most recent development of importance in con-

nection with worm gears is the new method of testing introduced in the machine built to the author's design by the Daimler Co., Ltd., and described in the present paper. By means of this machine, efficiency tests can be made with a degree of accuracy not hitherto obtainable—the average error is probably less than one-tenth of 1 per cent., the National Physical Laboratory certifying the accuracy as within one-fifth of 1 per cent. from the truth. The importance of rapid and accurate measurement of efficiency can scarcely be overrated; minute differences in the physical condition of the tooth surfaces, or in the extent of the tooth clearance, or in the character of the lubricant are detected, and the effect on efficiency determined with speed and certainty, and so the introduction of greater refinements is rendered possible; without doubt higher efficiencies will in the near future be reached.

## Controlling Factors in the Proportions and Design

The determination of the appropriate design of worm gear for any given duty is one that, like every other problem in engineering, depends upon the conditions that are given. In some cases the ratio of the transmission is a determining factor, it being essential to make some definite speed reduction; in other cases considerable latitude may exist as to the ratio of gear that may be employed, the external conditions, i. e., the revolution speed of the motor or some member of the transmission drive being variable. In most cases it is the torque or horsepower to be transmitted that mainly determines the size and standard of the gear to be employed. In the application of worm gear to an automobile the most important variable factor is the weight of the vehicle. The road wheel diameter varies comparatively little on any given class of car, otherwise it would be more accurate to say that the main variable is the torque on the driving axle. The fact that the road wheels in common use vary but little in diameter means that the torque on the rear axle for a given road duty is approximately proportional to the weight of the machine. It is quite true that one of the important factors in the resistance of an automobile is wind reaction, but the maximum load on the transmission is determined by the resistance on heavy gradients where the speed is insufficient to render windage of importance. On the lower gears the torque transmitted by the worm due to gravity alone is considerably greater than the torque required to overcome the continued resistance of gravity and windage on the higher gears.

In considering the design of worm gear for a motor car, whether it be a pleasure vehicle or a commercial vehicle, we are led to the conclusion that the main factor in determining the size of the worm gear is the torque on the driving axle. Now, if it is proposed to propel any given vehicle with an engine of specified horsepower, we know that the said horsepower may be obtained by large cylinders and slow revolution speed, or smaller cylinders with a higher revolution speed; it is evident, therefore, that we require ready means of comparing the power transmission capacity of worm gears of given centers, under conditions of constant driven torque and variable speed reduction ratio. In the present connection it may be pointed out that, in certain cases (especially where noise is unimportant) a gear may be used between the motor and worm shafts in place of the direct drive, in order to accommodate a worm standard that might otherwise be unsuitable. In designing or laying out worm gear, the use for which it is required is one of the most important factors in imposing limitations to the proportions that may be used. Thus, for a motion transmitting worm gear where mechanical efficiency is of no importance, the only limitation is that the tooth pitch

\*Summary of paper read before the British Institution of Automobile Engineers on February 12.

on the driving member should not be too steep—it must make an angle to the axis greater than the effective angle of friction. When it is desired that the gear should be self-locking, that is to say, “irreversible,” the tooth angle itself must be less than the effective angle of friction; but assuming efficiency to be unimportant, within this angle it may be as small as we please. When the conditions require that the gear shall be as high as possible, the angle of the worm tooth must be less than the angle of friction, but should be made as near to the angle of friction as practicable. Under these circumstances the maximum limit of efficiency is 50 per cent. When a worm or screw gear is required essentially for power transmission, the angle of the worm must be made about 40 degrees if the highest efficiency is to be obtained.

#### Maximum Horsepower Transmissible

The maximum horsepower that can be transmitted through a pair of gears of given design depends upon the pressure that can be safely transmitted between the teeth. In an ordinary journal bearing, the transmission of pressure and the limiting pressure that may be used has a more or less definite meaning; thus in the case of a plain bearing the pressure so specified means definitely the mean pressure on the oil film. In the case of worm gear, however, it is necessary to make use of a convention in speaking of the tooth pressure, since we do not know the precise area over which the reaction at any instant is distributed. It has been the custom of the author for many years to express the force transmitted by the teeth as a pressure per square inch on the protected area of the worm wheel teeth. On this basis worm gear cut according to the author's system will carry easily one ton per square inch, and is good for an overload of two or three times that amount, in fact a load of two tons per square inch may be looked upon as a safe load, inasmuch as the gears will run satisfactorily with such a load for an indefinite period. Taking a car and passengers weighing two tons gross on a 1 in 12 gradient, we have roughly a traction resistance with allowance for road resistance of 0.2 of a ton, which represents on the worm teeth 0.8 ton on a projected area of approximately half an inch, that is to say, 1.6 tons to the inch; the gear in question will work quite satisfactorily and will show no signs of distress under these conditions.

#### The Testing of Worm Gear

The most important direction in which it is desirable to test worm gear is to determine its efficiency under various conditions of load and speed. Where the efficiency of any piece of mechanism is high, such tests, to be of any real service, must be carried out with a very high degree of accuracy. Thus, where an efficiency of 97 per cent. or thereabouts (as in a well-designed worm transmission) is obtained, it is useless to employ methods having an error of 1 per cent. more or less. Any such error may be legitimately looked upon as a 33 per cent. error in the measurements of the power wasted in transmission. If the tests are to tell us anything of a nature useful to the engineer in the improvement of his methods of generating, or to enlighten him as to the best conditions under which worm gear is to be employed, he must be able to detect with certainty variations in the amount of power lost of a far less magnitude than this. It might, in fact, be said that unless the loss of power can be determined to within about 5 per cent., the method of test must be looked upon as unsatisfactory. Thus, taking 96 per cent. as a good average worm gear efficiency, the loss of power is 4 per cent., and the determination should be within an error of one-fifth of 1 per cent. This is the degree of accuracy obtained as certified by the director of the National Physical Laboratory by the new Daimler-Lanchester testing machine.

In principle, the new machine is an instrument for the direct comparative measurement of two torques acting about axes at right angles, or more generally about axes making any angle with each other, but unsuited to cases where the torque axes

approach the parallel. It is evident that in any gear transmission where there is no slip the efficiency is given by the ratio of the torques of the driving and driven elements divided by the gear ratio (or multiplied by the gear ratio if it is expressed in the inverse form). Thus, if the efficiency were perfect, the torque ratio and gear ratio would be identical; or if, for example, the efficiency were 0.5, the torque of the driven element would be 0.5 of what it would be on the basis of perfect efficiency.

Many facts of considerable importance both to the designer and to the user have been elucidated by the recent tests by the new method. Not the least important of these is the marked difference in behavior that is found to exist between the ordinary parallel type of worm and that of the Hindley type, i. e., the Lanchester gear, on which the majority of the tests were made. These tests confirm some previously roughly-made tests carried out by the ordinary methods by the Daimler Co., at the time they first adopted the worm drive on their rear axle. Summarized, it appears that, at the best, the parallel worm can scarcely reach the efficiencies shown as a regular feature by the Lanchester gear; at the worst the efficiency of the parallel gear falls 3 or 4 per cent. lower, this being particularly the case at heavy loads. It would appear that the oil film begins to break down in the case of the parallel worm at loads that the Lanchester sustains without loss of efficiency.

A second fact brought out by these tests is that the loss of efficiency at reduced speeds is far less than previously supposed; at the lowest useful motor car speeds it rarely falls much below 94 per cent., and it is quite exceptional to record efficiencies below 93 per cent.

#### Lubrication

A third fact brought out is the great variations in efficiency due to differences in the lubricant employed, and the individual character of the diagrams or curves obtained when different lubricants are submitted to test. The main conclusions to be drawn (apart from the definite indications as to the best oil to use) are: (1) That, in general, mineral oils are very inferior to animal or vegetable oils; (2) that the viscosity of the oil is little or no guide in the selection of an oil for the purpose in question; (3) that the efficiency may be lowered by the presence of too much lubricant in the gearbox.

A fourth fact brought out is that the best efficiencies are obtained with a certain perceptible tooth clearance; the said best clearance in an ordinary motor car gear appears to be about 1-64 in. (somewhat less than half a millimetre).

A fifth fact of importance is that in the Lanchester gear the efficiency is best with quite heavy loading; there is virtually no falling off in efficiency due to overloading—at least unless carried beyond the point that ever occurs in practice.

Lastly, it may be noted that the heavier loads are carried with the best results at high speeds of revolution.

#### “FINISHING METAL PRODUCTS”

Moller & Schumann Co. has issued a little booklet with the above title, and it is full of instructions as well as information for all who use japans, enamels, and other kinds of varnish products to give a brilliant finish to steel furniture, machinery, stampings, etc.

The Moller & Schumann Co. products are so firmly established that merely to mention the name spells varnish of all good kinds.

#### PLEDGES \$100,000 FOR HIGHWAY

The Hudson Motor Car Co., of Detroit, Mich., has pledged \$100,000 to the fund for the ocean-to-ocean highway projected by Carl Fisher and J. A. Allison, of Indianapolis. The amount, it is stated, represents one per cent. of the Hudson gross earnings for one year.

**S. A. E. DISCUSSES KEROSENE**

Kerosene and the kerosene carburetor were the subjects of discussion at a meeting of the Metropolitan Section of the Society of Automobile Engineers, the evening of February 27. A. C. Bennett, of the Wilcox-Bennett Carburetor Co., Minneapolis, gave many interesting particulars of practical experiments he has recently conducted with a view to evolving a satisfactory carburetor for the heavier fuel. The commercial possibilities of such a carburetor are generally recognized. With the increasing price of gasoline its introduction at an early date is becoming almost a necessity.

The greatest difficulty encountered in an attempt to use kerosene as a fuel in explosion motors, Mr. Bennett pointed out, was that of breaking up the fluid into sufficiently fine particles before entering the cylinder. There is a considerable difference in this respect between the operation of gasoline and kerosene. In the first vaporization takes place immediately after leaving the carburetor, whereas in the case of kerosene the fuel is in a state of spray throughout the inlet passages and until its entry into the cylinder. The real problem, therefore, is to devise a means of reducing the fluid to the finest possible particles, and in order to do this, Mr. Bennett found that a high velocity of inlet flow was desirable. This was accomplished by using a much smaller manifold than is general practice with gasoline engines, and also by opening the inlet valve late so that the partial vacuum created would induce a faster flow through the carburetor jets and manifold passages. Easy curves in the manifold are of no benefit. In fact, in the experiments in question fins were introduced for the express purpose of making the passages more difficult so that the breaking up of the fuel was more thorough. A multiple-jet carburetor was used and the kerosene before entering was heated. The air, on the other hand, was allowed to be drawn in cold. Water was then added in small quantities from a hand-controlled jet. It was found that the necessity of adding water varied according to the design of engine. Without it preignition is liable to occur in most engines. The compression was not altered for the kerosene experiments. But it was found necessary to provide more clearance for the piston owing to the greater heat encountered by its upper surface.

The question of carbon deposit was dealt with by Mr. Bennett. Results showed that with a careful choice of good lubricating oil and the correct positioning of the spark plugs very little of the trouble usually associated with the word kerosene was experienced. An important point, however, is that the spark plugs be not pocketed, but located in such a position that the points are swept by the gases. The points themselves should be of fine wire, arranged so as to minimize the accumulation of carbon as clean plug points are absolutely essential.

In conclusion, Mr. Bennett expressed his belief in kerosene as a solution of the impending shortage of gasoline for pleasure car purposes by utilizing it as a fuel for all stationary and truck motors. A short discussion followed in which various members of the society took part.

Another matter decided at the meeting, on the suggestion of C. F. Clarkson, was the formation of a committee of three to inquire into the existing and proposed legislation affecting motorists. The three members appointed were: W. P. Kennedy, H. G. McComb and A. J. Slade.

The appointment of officers for the ensuing year was also part of the business transacted. J. A. Anglada was reelected chairman of the governing committee; Herbert Chase, treasurer, and M. B. Pope, secretary.

**WILL BUILD PLANT FOR CANADIAN TRADE**

The B. F. Goodrich Co. expects to break ground as soon as the frost is out of the ground, for a plant at St. Catharines, Canada, to take care of their Canadian trade. This plant will start with approximately 1,000 men and will be increased as business demands.

**GERMANY'S EXPORT GAIN \$6,438,000**

During the year 1912 the automobile export business of Germany made a giant's stride—from \$11,475,884 to \$17,914,736, a gain of \$6,438,852. Curiously enough, Russia bought more German cars than any other country, spending \$3,798,006; Austria spent \$2,330,258, Brazil \$2,306,224, and Great Britain \$2,242,674. The United States is far down the list, being nineteenth, the cars bought having a total valuation of only \$211,582. The German exports are classified as passenger vehicles, valued at \$15,472,618; commercial vehicles, valued at \$1,849,022, motorcycles, valued at \$593,096.

**CHALMERS TO ISSUE \$1,500,000 IN STOCK**

The Chalmers Motor Co., Detroit, Mich., plans to issue \$1,500,000 in 7 per cent. preferred stock. The proceeds from the issue are to be used merely as a reserve fund for protection against contingencies, and not to pay off any existing obligations as was stated in some quarters. Sixty-five representatives of banking institutions in various parts of the country inspected the factory March 1 to ascertain whether they could handle the issue. As their opinion was favorable, there is no doubt that the issue will be formally authorized.

**L'AUTO-CARROSSERIE**

This is the name of a French trade journal whose support of the automobile and carriage building interests is most intelligent and effective.

It is published by G. Mathiere, 32 Rue de Charonne, Paris, France, and even though the subscriber is not up to the foreign tongue he cannot help receiving the worth of the subscription price (28 francs for foreign subscribers) owing to the wealth of designs and working drafts in each issue.

**OWEN REMAINS DISPOSED OF**

The entire stock and equipment of the Owen Motor Car Co., formerly of Detroit, but which was absorbed by the Reo Motor Truck Co., of Lansing, which transaction later led to bitter litigation, has been sold to the M. & M. Co., of Cleveland, O., which makes a specialty of such purchases. The price paid is not public property, but it is stated that the machinery and material acquired is of an approximate value of \$300,000.

**QUICKEST WAY TO CUT SHEET METAL**

The quickest way to cut tin or other sheet metal with a cold chisel is to put it in a vise with the cutting line level with the jaws, and use the chisel along the top of the jaws. A straight, easy cut can be made in this way, and the sheet can be shifted if the cut is longer than the width of the jaws.

**FIRE DESTROYS DOUBLE FABRIC PLANT**

Fire on February 8 destroyed the W. H. McIntyre building in Auburn, Ind., which was occupied by the Double Fabric Tire Co. and the W. H. McIntyre Co.'s retail salesroom. The tire company's equipment was completely ruined and ten McIntyre automobiles and a large number of buggies were destroyed.

**ROCHESTER WHEEL CO. QUILTS**

A western New York paper says: "Outside parties having bought a controlling interest in the Rochester Wheel Company, its plant in Brockport has been closed and the stock and material on hand will be shipped elsewhere. The factory has employed some 50 hands."



# Trade News From Near and Far

## BUSINESS CHANGES

L. Plumlee has purchased the Alex. Kulp Buggy Co. plant in Paducah, Ky.

L. B. McCullough has purchased the Hughes Wagon Works, at Mobile, Ala.

Anderson & Halin have purchased the Boone Carriage Works at Boone, Iowa.

Orion Burt has purchased the Teeter Harness & Buggy Co. at Stafford, Kas.

W. H. Wright has purchased the vehicle business of R. W. Stillinger, in Boone, Ia.

Trueblood & Sons have purchased the stock of buggies, etc., of A. J. Rowe, in Hooper, Neb.

W. W. Lewis has purchased the stock of carriages, etc., of F. J. Weier, in Ridgeway, Wis.

Kennedy & Robrahn have purchased the vehicle business of J. B. Walthall, in Gridley, Kas.

J. W. Buck has disposed of his stock of buggies, etc., in Formosa, Kas., to G. E. Wills.

Juers & Vogel have succeeded to the business of Robinson & Juers, in Zumbro Falls, Minn.

J. L. Lewis has disposed of his vehicle business in Butler, Okla., to Mitchell & Grandstaff.

S. E. Steussy has purchased the Herman Wieland stock of vehicles, etc., in Foxhome, Minn.

Claud Keller has purchased the stock of vehicles, etc., of Wm. Sumption, in Rogers, Neb.

J. H. Sorenson has purchased the stock of vehicles, etc., of E. F. Morris, in Hartington, Neb.

A. V. Henry has purchased the stock of buggies, etc., of Blakely & Son, in Cambria, Mich.

Carlson & Christensen have succeeded to the vehicle business of Carlson & Nelson, in Soldier, Ia.

Miller Bros. have disposed of their vehicle business in Parker, S. D., to R. March, of Marion, S. D.

Andrew Armour has succeeded to the entire business of Bartlett & Armour, in Hecla, S. D.

T. Beishaar has purchased the stock of buggies, etc., of Thomas & Holmes, in Oskaloosa, Ia.

Baker & Ross have succeeded W. H. Baker in the vehicle and implement business in LeRoy, Ia.

C. W. Vance has succeeded Chas. W. Young in the vehicle and implement business in Rivera, Cal.

Davenport & Garner have purchased the stock of vehicles, etc., of R. P. Doze, in New Sharon, Ia.

Rutherford & Barnes have succeeded to the vehicle business of Rutherford & Shean, in Aurora, Neb.

Geo. and Walter Leaper have purchased the stock of vehicles, etc., of C. B. McCall, in Diller, Neb.

Z. J. Townsend & Son bought the McNaughton hardware and vehicle business at Middleville, Mich.

C. N. Reynolds has disposed of his stock of vehicles and hardware in Rogers, Neb., to F. J. Henry.

G. Knight has purchased the stock of vehicles and implements of David Cook & Sons, in Blue Springs, Neb.

M. Stava has admitted a partner in his business in Linwood, Neb., and the firm is now Stava & Franklin.

Gail Wilson has disposed of his stock of vehicles, etc., in Salina, Kas., to E. C. Dunham, of Frankfort.

E. A. Oppegaard has become the owner of the old Marpe Bros. stock of vehicles, etc., in Emmons, Minn.

J. S. Calder, of Hays, Kas., has purchased the stock of buggies, etc., of W. M. Cowman, in Beloit, Kas.

Hammersley & Ireland have purchased the stock of vehicles and implements of Welch & Robbins, in Puente, Cal.

The Farmers Handy Wagon Co., of Saginaw, Mich., has changed its name to the McClure Co. and increased its capital stock to \$500,000.

## NEW FIRMS AND INCORPORATIONS

Frank Smith has just opened a new stock of vehicles, etc., in Tilton, Ia.

Hugh Campbell is about to open a stock of buggies, etc., in Wyoming, Ia.

E. C. Ghornley has opened a new stock of buggies, etc., in Pensacola, Okla.

M. A. Loben has engaged in the vehicle and implement business in Oelwein, Ia.

Dunbar Bros. are about to erect a three-story wagon factory in Spartanburg, S. C.

Kincaid & Taylor have opened up a new stock of buggies, etc., in Randolph, Neb.

Samuel Armour has opened a new stock of hardware and vehicles in Sedgwick, Kas.

Bender Bros. are about to engage in the vehicle and implement business in Holton, Kas.

The Watts Wagon & Auto Co. has been incorporated at Harrisburg, Pa., with a capital of \$5,000, by Robt. C. Birmingham.

The Bowden Carriage Co., Texarkana, Tex., capital \$5,000, has been incorporated by W. A. Gibbons, Andrew Bowden and W. G. Patterson.

The Aldrich Mfg. Co. has been organized at Detroit, Mich., with a capital of \$50,000 to manufacture garbage wagons, garbage receptacles, etc.

The Berkeley Buggy Co. has started in the vehicle business at Martinsburg, W. Va. Capt. D. W. Shafer and Ray Barney are the proprietors. Harness will also be handled.

Marshall & Co. are building a brick wagon and buggy manufactory at Middlesboro, Tenn. They will build wagons, buggies and other vehicles; in addition they will repair automobiles. They will work about ten skilled men.

## IMPROVEMENTS AND EXTENSIONS

Boe & Jacobson are about to erect a new vehicle repository in Alexander, N. D.

The Goshen (Ind.) Commercial Club will erect a plant for the Lewis-Neville Carriage Co. to prevent its removal.

The South Texas Implement & Vehicle Co., of Houston, Texas, has increased its capital stock from \$75,000 to \$100,000.

The Breece Mfg. Co., Portsmouth, O., manufacturer of rims, spokes and veneer, has increased its capital from \$100,000 to \$300,000.

The D. M. Sechler Implement and Carriage Co., Moline, Ill., paid the Wilson Buggy Co. \$50,000 for its realty and buildings on Third avenue. While the Sechler concern takes over the ownership of the building and property, the Wilson-Moline Buggy Co. will continue to do business in the same plant.

The Thornhill Wagon Co., Lynchburg, Va., has had its charter amended, increasing its maximum capitalization from \$300,000 to \$1,000,000, the increased capital being necessary on account of the growth of the business of the company. The concern will manufacture 12,000 farm wagons this year and hopes soon to be the largest plant of its nature in the southern states.

The construction of a \$10,000 automobile and carriage repair shop has been started by the Standard Carriage Works, at

Denver, Col. The building will be two stories high, with a full basement, and will be equipped with new appliances for repair work. It will be built of brick and concrete and have two main entrances, one on Broadway and the other on Speer boulevard.

A two-story addition to its factory and an increase of capital stock from \$30,000 to \$75,000 will be made by the Michigan Hearse & Carriage Co., of Grand Rapids, Mich. Starting ten years ago on \$7,000 capital stock, the business of the company has now reached the point where the equipment and room must be added to. The additional building will be two stories in height, of steel and concrete construction, and 40 by 100 feet in dimension.

Washington (N. C.) Buggy Co. will double the capacity of its manufacturing plant. The present factory is 435 feet long by 80 feet wide and two stories in height. The new building which will be placed on the lot adjoining the present plant, will be 435 feet long by 100 feet wide and three stories high. The new factory will manufacture a cheaper grade of buggies than the one now in operation, in order to meet a growing demand for cheaper buggies. In the new factory wheels and gear wood will also be manufactured.

### FIRES

E. F. Benson's wagon shop at Welland, Ont., was destroyed by fire February 27.

The stock of vehicles, etc., of Reuter Bros., in Carlos, Minn., has been destroyed by fire.

Emery's carriage shop near Berwick Village, N. H., was destroyed by fire, February 25.

The stock of vehicles, etc., of Miller & Miller, in Harbor Springs, Mich., has been destroyed by fire.

Prillman Bros, hardware, vehicles, etc., at Yorktown, Ind., burned out. Loss \$16,000; insurance \$10,000.

Oskaloosa (Ia.) Mfg. Co., manufacturer of wagon boxes, etc., suffered a loss by fire of \$15,000; partly insured.

The Flynn & Doyle Carriage Manufactory at Bantam, Conn., was destroyed by fire, February 20. Loss \$30,000.

The carriage repair shop of Welch, Duryea & Grady, at Somerville, Mass., was destroyed by fire February 27.

At Amesbury, Mass., fire damaged the automobile body factory of J. H. Leigh; loss is \$12,000, largely from water.

The Consolidated Vehicle Co., Jas. A. Brown, proprietor, at Healdsburg, Cal., was destroyed by fire February 22.

The plant of the One Buggy Co., which was recently taken over by the Parker Mfg. Co., at Suffolk, Va., was totally destroyed by fire February 14. The loss is approximately \$40,000.

The Cambridge (Mass.) Coach Co. sustained a severe loss by fire on February 27. Between 30 and 40 vehicles on the upper floors and an automobile on the first floor were consumed.

Lee & Porter Mfg. Co.'s axle factory at Buchanan, Mich., was damaged by fire on the morning of February 11 to such an extent that the plant will have to be rebuilt. This will be done immediately.

### NEWS OF THE AUTOMOBILE TRADE

The Universal Wheel Co. has engaged in business in Detroit, Mich., with a capital stock of \$250,000.

The W. C. Hendire Rubber Co., of Denver, will erect a \$100,000 automobile tire factory in that city.

The Midland Motor Co., of East Moline, Ill., plans to enlarge its plant. Work will be inaugurated immediately.

La Crosse (Wis.) capitalists have completed plans for the erection of an automobile factory, which will manufacture an \$800 car, by the Hofweiber Bros. of that city.

The Conover Limousine Top Co., of Buffalo, N. Y., capital \$125,000, has been incorporated by R. J. Conover and others, to manufacture limousine automobile tops, etc.

The Feilbach Motor Co., located at 1144-1154 Holton street,

Milwaukee, Wis., will build a large and modern factory on a tract of land embracing five and a quarter acres.

Another large addition has been made necessary at the National Motor Vehicle Co.'s building at Indianapolis. The newest addition is a modern brick and cement building.

The latest addition to Detroit's list of automobile manufacturing is the Monarch Motor Car Co., which filed articles of association corporation. Louis G. Hupp heads the concern.

The Lydon Mfg. Co. has been incorporated at Chicago, Ill., with a capital of \$25,000 to manufacture automobiles. S. Donahue, F. M. Donahue and W. E. Lyons are the incorporators.

Edward G. Rudd has purchased the plant formerly occupied by the Grabowsky Power Wagon Co., in Detroit, on the southwest corner of Mt. Elliott avenue and Dunn road and expects to spend about \$175,000 to improve it.

Earl Potter, Don Evans and H. G. Dewey have promoted an auto truck company which will be located in St. Louis and will manufacture a half ton truck to cost \$900. They will also manufacture a light farm tractor. The company will be styled the Admiral Auto Co. and will be capitalized at \$50,000.

The Harley-Davidson Motor Co., Milwaukee, Wis., has secured the building at the northeast corner of Clinton and Oregon streets. The company's lease is for two and a half years, with option of extension. The acquisition of the building means that the motor company has extended its floor space again by an addition of 143,600 square feet. Two concrete buildings completed by the company last fall have a floor area of 107,000 square feet.

### HAYWOOD WAGON COMPANY BANKRUPT

The Haywood Wagon Company, a Newark, N. Y., corporation, has gone into bankruptcy. The liabilities to their general creditors are in the neighborhood of \$80,000 and there is a bonded indebtedness secured by a trust mortgage on the realty, tools, machinery and stock of \$55,000. The assets are about \$35,000. Peter B. Sleight, president of the Arcadia National Bank, has been selected as trustee by the creditors.

### KNOX DECLARED A BANKRUPT

Growing out of the petition filed on January 20 last by three minor creditors, the Knox Automobile Co., of Springfield, Mass., has been formally adjudicated a bankrupt. A meeting of the creditors was held February 28, at which trustees were chosen and at which time arrangements were effected that permit of the projected reorganization.

### BECOMES MILLION DOLLAR CORPORATION

The McGraw Tire & Rubber Co., of East Palestine, O., which heretofore has been a Pennsylvania corporation, has taken out a new charter under the laws of Ohio. The authorized capital of the new corporation is \$1,000,000. When additions and improvements now in progress are completed, it is stated that the McGraw plant will have a capacity of 1,500 tires per day.

### JONES TAXIMETER COMPANY DISSOLVES

The Jones Taximeter Co., of New York, finally has filed a certificate of voluntary dissolution. The company was an outgrowth of the Jones Speedometer business but has not been active for a year or more, having transferred the patents under which it operated to the American Taximeter Co.

### WILL REORGANIZE

The Laporte Carriage Company will be reorganized, it is said, soon after the dismissal of the receivership proceedings and the settlement of the suit on bond issue, brought by the Michigan City Trust and Savings Company.

## OBITUARY

**August Timpfe**, of the firm of Timpfe Bros. Wagon Co., Denver, Col., died at his home in that city on January 26. August Timpfe was born in Luedinghausen, Germany, in 1859, and came to this country in 1883. In 1890 he started, at the present business site in Denver, a wagon building and repair shop, and was joined by his brother William in 1897. Under the careful management of the two brothers the business grew from year to year, new buildings were erected, until at the present time the plant covers one-half of a city block. He leaves his wife, a son and a daughter. The business will be continued by William Timpfe and Mrs. August Timpfe.

**John P. Schlitz**, president of the Brookville Carriage Co., Brookville, Ind., died February 13, after a long illness. He was in his 74th year.

**William H. Murphy** died at his home in Farmington, Del., February 4, of acute indigestion, in his 71st year. For 40 years he was engaged in the business of building wagons in Farmington.

**W. E. Moyer**, Des Moines, Iowa, one of the best known automobile dealers in Iowa, died February 12, at Silver City, N. M., where he had gone three month ago for the benefit of his health. At the time of his death he was president of the Des Moines Automobile Dealers' Association and a member of the executive committee of the American Automobile Association. G. W. Jones has purchased Mr. Moyer's interest in the Moyer Automobile Co. and will continue the business.

**Samuel P. Kaler**, 60, manager and secretary of the Harper Buggy Co. at Columbia City, Ind., died February 22 from heart trouble and a general breakdown of the nervous system.

**A. L. Moore**, 63, for many years superintendent of the Moline (Ill.) Wagon Co., died in Rome, February 24. Mr. Moore had been touring Europe in company with his wife and sister. The body was sent to Fond du Las, Wis., for interment.

**J. C. Frank**, 76, one of Newport's (Pa.) most prominent business men, died February 11, from pneumonia. The deceased was born at Montgomery's Ferry. He had been a resident of Newport for 45 years, engaged in the carriage making business up until his death. His wife and six children survive.

**John E. Dusenbury**, 76, president of the Conklin Wagon Works, Geneva, N. Y., died February 8, after a lingering illness.

**John H. Schmidt**, Morristown, N. J., one of the oldest carriage builders in New Jersey, died February 21, after an illness of a year. He was 82 years old. Mr. Schmidt was born in Germany and came to this country when he was a boy. He had been in the carriage manufacturing business in Morristown since 1861. Mr. Schmidt is survived by his widow and six children.

**William P. Taft**, formerly a resident of the towns of East and West Bloomfield, N. Y., died at New Rochelle, N. Y., February 17, at the age of 86 years. He was born in West Bloomfield, and for many years resided at East Bloomfield, where he conducted a carriage manufacturing business. He is survived by a son and two daughters.

**James Iverson**, 80 years old and a resident of Minneapolis, Minn., since 1871, a carriage and wagon manufacturer who was said to have made the most of the wagons and sleighs used in the lumber industry in Minneapolis in the early days, died February 6 at his home, 3309 Aldrich avenue S. He and Mrs. Iverson, who survives him, celebrated their golden wedding in 1908. He leaves one son, three daughters and seven grandchildren.

## PERSONAL

W. W. Sechler, who for the past 17 years has been calling upon the carriage and automobile trade for the Standard Varnish Works, has engaged with the Forbes Varnish Co., Cleveland, O., and will cover his old territory, with headquarters in Dayton, O.

Roy G. Harris, for the past three years in charge of sales and publicity for the Vreeland Chemical Co., of New York, has joined the Firestone Tire and Rubber Co. Mr. Harris will be assistant advertising manager, with headquarters in Akron.

E. W. Harral, president of the Fairfield Rubber Co., Fairfield, Conn., spent a part of the month of February at Hot Springs, Va., leaving that place on the 28th for Washington, where he took in the inauguration ceremonies of President Wilson.

George J. Bates has recently connected with the Firestone Tire and Rubber Co., Akron, O., having charge of the sales in the pneumatic tire department. Mr. Bates for the past five years has occupied the position of a department manager with the Diamond Rubber Co. He will continue to reside in Akron, Ohio.

J. S. Stewart, of the Stewart-Mowry Co., Chicago, sailed from New York on January 30 for a Mediterranean trip, to be gone several months.

A. T. Jackson, secretary and manager of the Emerson Carriage Co., Rockford, Ill., recently spent a 30-day vacation at St. Petersburg, Fla., the first vacation he had taken for five years.

James Swan, the popular representative of the Cleveland Hardware Co., is at a hospital where he underwent a surgical operation.

E. H. Broadwell, vice-president in charge of sales of the Hudson Motor Car Co., of Detroit, has disposed of his interests and wholly retired from the company. C. C. Winningham, former advertising manager, has assumed charge of the sales department also and with it the new title, director of sales and advertising.

A. C. Barley, at one time secretary and a director of the Rutenber Motor Co., has completed negotiations whereby he has become possessed of the property of the bankrupt Streator Motor Car Co., in Streator, Ill. He already has reopened the factory and will recommence the manufacture of Halladay cars on a conservative basis, devoting himself chiefly to the \$1,450 model.

## Wants

Help and situation wanted advertisements, 1 cent a word; all other advertisements in this department, 5 cents a word; initials and figures count as words. Minimum price, 30 cents for each advertisement.

### PATENTS

**Patents**—H. W. T. Jenner, patent attorney and mechanical expert, 608 F St., Washington, D. C. Established 1883. I make a free examination and report if a patent can be had and exactly what it will cost. Send for circular.

### SITUATION WANTED

I have had 35 years' experience in New York City in the carriage, wagon and automobile business; have full knowledge of all departments of the trade; understand estimating on new or old work; am a man of steady habits and don't drink; would like a situation as foreman, manager or superintendent, in or out of the city. U. T. Date, Postoffice box 14, Grand Central Station, N. Y. City.

**NEW TIRE PLANT FOR TRENTON**

The Delion Tire and Rubber Co., Inc., of Trenton, N. J., and New York, has contracted for the erection of a three-story fireproof building on East State street, just outside the city boundary line. The building is to be modern in every particular and will be of steel construction, with reinforced concrete floors and other material calculated to make it fire proof. The contract calls for the completion of the building by May 1, when the manufacture of high-grade automobile tires will commence. The company is to make a tire which it will guarantee for 5,000 miles service. The building is to cost in the neighborhood of \$60,000. R. S. Peale, of 111 Broadway, New York, is president of the corporation, and he has interested Trenton capital in the enterprise.

**WHEELS AND TIRES ARE NOT "PARTS"**

The Board of United States General Appraisers has decided that the tariff act of 1909 requires that automobile wheels and tires be assessed for duty separately, the decision being rendered in the case of Thomas Meadows & Co. and Irving Katz. Collector Loeb held that as tires and wheels were assembled articles they were properly dutiable at 45 per cent. ad valorem as "parts of automobiles." The board of appraisers, however, sustain the claim of the importers, who maintain that the tires should be granted a rating of 35 per cent. ad valorem as "manufactures of rubber," the board pointing out that tires are expressly excluded from paragraph 141, which covers "finished parts of automobiles."

**FORD PLANS TO ERECT MONSTER NEW AUTO PLANT**

Automobile plants 1,000 feet in length are common in Detroit. A length of 1,700 feet, practically six city blocks, is thought to set a new record. The Ford Motor Co. is having plans prepared for the erection of three buildings, each three stories in height and each 1,700 feet in length, which will add many thousand square feet to the total floor space now in use at the plant, which totals 26 acres.

Some idea of the enormous work of construction which will be required may be gained from the quantities of material to be used. The company is soliciting prices on 1,000,000 barrels of cement.

**KING REINCORPORATED WITH \$200,000**

Artemus Ward, of New York, who several months ago purchased the King Motor Car Co., of Detroit, and of which he is the three-quarter owner, has reincorporated it, under the laws of Michigan, with an authorized capital of \$200,000. Ward himself will figure merely as a director of the company, of which his son, Artemus Ward, Jr., is vice-president. J. G. Beyerline is president, and F. A. Vollbrecht treasurer. The other directors are T. A. Bollinger and T. P. Chase, of Detroit.

**STUDEBAKER PROFITS**

According to a report of the Studebaker Corporation, of Detroit, Mich., for the year ending December 31 last, its profits from manufacturing and trading amounted to \$3,342,560, an increase of \$650,712. The surplus, after making all charges, amounts to \$2,313,245, an increase of \$659,663.

**SALE OF THOMAS ASSETS**

March 17 has been set as the date for the receiver's sale of the assets of the E. R. Thomas Motor Car Co., of Buffalo, none of the real estate, however, being included in the sale. The property to be disposed of comprises 6,000 separate lots of machinery, equipment and parts.

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Fit either straight side or clincher tires. Two turns of a nut unlocks the rim for demounting, two more turns locks the rim in place. Write for catalogue 609.

**THE UNITED RIM CO.,****AKRON, OHIO**

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THAT'S what you want, friend DEALER, and that's good news involved in the handling of

## THE RACINE AUTO TIRE

We'll tell you why!

BECAUSE, your customer will not be worried by seeking to avoid the many sharp things that puncture other tires, for they won't puncture THE RACINE as it takes a pressure of over 4,000 pounds to puncture the chrome tanned leather outside jacket.

BECAUSE, your customer will find it unnecessary to carry that extra tire; four good revolving tires (RACINE AUTO TIRES) being all he will need.

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Manufacturers of

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## KEYSTONE BLACK FILLER

MAKES A PERFECT

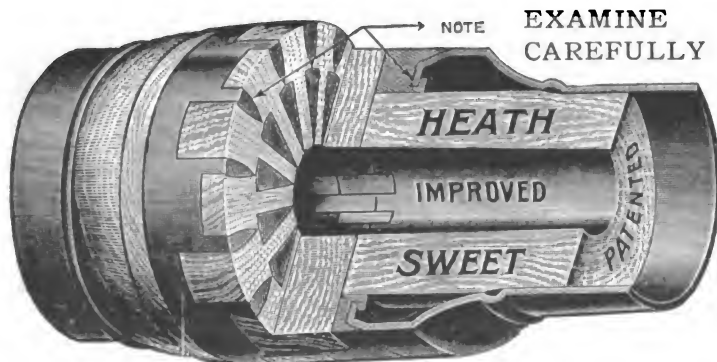
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For Automobile Bodies and Parts

It fills the pores of Metal and Wood perfectly. Sandpapers easily and produces a fine, smooth surface that DOES NOT CRACK, SCALE NOR PEEL.

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SHORTSVILLE WHEEL CO.,

## HEATH HUB

You Won't Find a Flaw

Manufacture also

SWEET  
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## Automobile Wheels

Shortsville, New York



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BECAUSE, those cup-like studs that you see in our illustration will grip the ground just where, and just when, the ground needs gripping; so that he is free from the danger of skidding and slipping.

BECAUSE, his tire EXPENSE account will show a difference such as will cause him to talk enthusiastically to others about you and the RACINE AUTO TIRE.

All this counts for good business; so get busy. The RACINE AUTO TIRE is going into the hands of live, pushing dealers. We shall make it equally advantageous to them as to us. Be amongst the live ones. Take our proposition. Do it now; and together let us do it thoroughly.

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To Cut 5-16, 3-8, 1-2, 5-8, 3-4 Inch.

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Manufacturers of  
**Wheels** AUTO  
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**BUFFALO**  
Special Truck Top for Autos  
*To see it is to want it*  
**BUFFALO T. & T. CO.**  
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Reduces weight of springs one-half.  
Made in one size only but will fit bodies  
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Write for further particulars and prices.  
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Pure Stearic Acid Candles. Wheel Stock. Snow  
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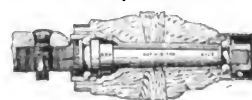
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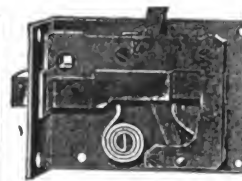


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Its function is to permeate and seal the surfacer coat and provide a perfect non-absorbent foundation to prevent the sinking in of the subsequent coats of color varnish and finishing.

Celox Sealer produces the following remarkable results:

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3. It thus protects the job in case the finish becomes scratched or dented in use.

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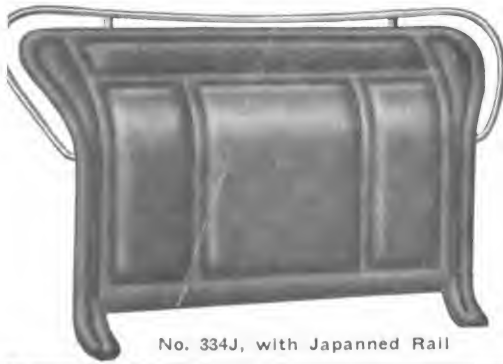
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 Name .....  
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 Please send me information regarding your  
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No. 334J, with Japanned Rail

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### "BLACK VELVET" CUSHION SPRINGS

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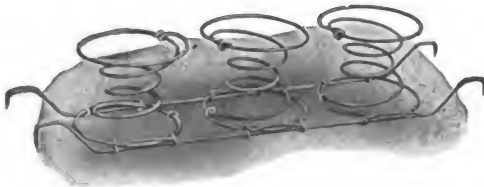
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